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Contents

Finance & Development
A Quarterly Publication of the International Monetary Fund
June 2025 | Volume 62 | Number 2

Europe

18
Europe's Integration Imperative
The case for closer economic union has become more compelling as external challenges multiply
Alfred Kammer

24
Making Germany Grow Again
Long-term, future-focused investment can rescue Europe's largest economy from stagnation
Ulrike Malmendier and Claudia Schaffranka

28
National Perspectives
Ministers from Poland, Greece, and Spain discuss their economies
Andrzej Domański, Konstantinos Hatzidakis, and Carlos Cuerpo

36
Europe's Elusive Savings and Investment Union
An integrated capital market must be accompanied by regulatory reforms to attract substantial investment
Ravi Balakrishnan and Mahmood Pradhan

40
Europe's Innovators Are Waking Up
The continent's innovation success stories and renewed sense of purpose defy criticism of overregulation
Alessandro Merli

Also in this issue

44
The Longevity Dividend
Aging populations should be embraced, not feared
Andrew Scott and Peter Piot

48
Sustaining Growth in an Aging World
Older populations need not lead to slumping economic growth and mounting fiscal pressures
Bertrand Gruss and Diaa Noureldin

50
The Debate over Falling Fertility
A decline in global population later this century may threaten human progress, or it may lead to better lives
David E. Bloom, Michael Kuhn, and Klaus Prettner

54
Machine Intelligence and Human Judgment
AI could reverse the widening inequality driven by technology, or aggravate it
Ajay Agrawal, Joshua Gans, and Avi Goldfarb

58
A Moving History
Migration has propelled human progress for hundreds of thousands of years
Ian Goldin

"Fertility's fall may threaten human progress, or lead to better lives."

HADLEY HOOPER

Departments

6
Kaleidoscope
Our view of global issues and data points

8
Back to Basics
Politicians Strive for Competitiveness
But in most situations, productivity is the better path to prosperity
Kevin Fletcher

10
Point of View
We Need a New Growth Compact
Innovation and integration can revive growth amid sweeping geopolitical change
Pierre-Olivier Gourinchas

Reclaiming a Policy Role for Economists
Acknowledging missteps, listening well, defending data, and avoiding jargon will help the profession engage
Karen Dynan

Europe's Future Hinges on Greater Unity
But first the EU must overcome distrust between its member states and in its institutions
Simon Nixon

16
Picture This
Trade Reckoning
Stalled trade integration and rising tariffs are testing global economic resilience

62
People in Economics
The Innovative Central Banker
Andreas Adriano profiles *Agustín Carstens*, finance minister, head of the BIS, and central banker with a start-up mentality

66
Café Economics
Tech's Winner-Take-All Trap
When controlled by a select few, tech innovation can be self-serving and undermine the institutions that make it possible, says *Simon Johnson*

68
Book Reviews
A Critical Look at Dollar Dominance
Our Dollar, Your Problem: An Insider's View of Seven Turbulent Decades of Global Finance, and the Road Ahead
Kenneth Rogoff

Future-Proofing the Euro
Crisis Cycle: Challenges, Evolution, and Future of the Euro
John H. Cochrane, Luis Garicano, and Klaus Masuch

Economics and Nature's Laws
Entropy Economics: The Living Basis of Value and Production
James K. Galbraith and Jing Chen

72
Currency Notes
Two Patacas
Macao SAR's unique history has yielded different yet equally elegant versions of the same banknote
Salsa Mazlan

On the Cover
Cover artist Brian Stauffer depicts two figures atop one of the stars that make up the European Union's flag, spotlighting opportunities in a digitally rendered firmament.

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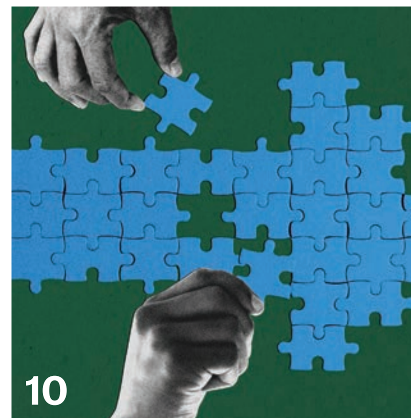
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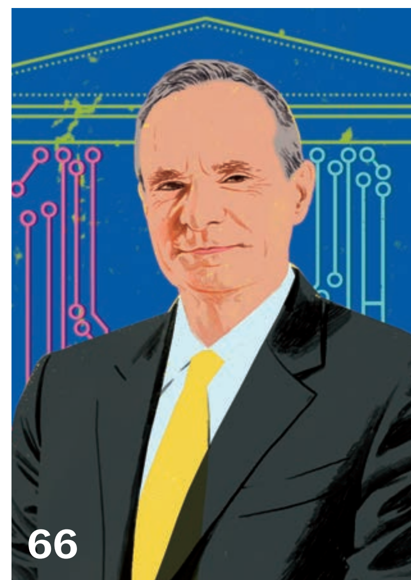
66

CHANTAL JAHCHAN, SONIA PULIDO

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Editor's Letter

Europe's Moment for Revival

NOT MANY PLACES match the European Union for quality of life. Its workers enjoy more time off than in many other regions, yet their living standards are among the highest. Its core values of solidarity are exemplified in social contracts that ensure the state will care for those who need it.

Yet lately the EU has lost confidence in its economic model. Wealthier than China and more populous than the United States, it has been trailing both in growth and has fallen back in technological innovation since the global financial crisis. The growth gap is widening as the continent's workforce shrinks, productivity stagnates, and trade tensions rise. And now governments are scrambling to boost defense spending to rely less on the United States for their security.

Can the EU rouse itself to meet the challenges of a new era marked by rapid geopolitical shifts and policy uncertainty? In this issue of *Finance & Development*, we examine that question in depth.

Alfred Kammer, head of the IMF's European Department, argues in our lead article that the case for closer economic union is more compelling than ever. A stronger single market could help deliver both faster growth and greater security, he writes.

It's no secret what must be done. Europe has a road map, laid out in reports by former Italian Prime Ministers Mario Draghi and Enrico Letta. Both focus on how to make the EU more competitive and productive. Key priorities include boosting innovation, supporting businesses, and enhancing economic security by consolidating fragmented markets, particularly in defense, energy, telecoms, and finance. And yet, asks Simon Nixon, will member states overcome distrust of each other and of EU institutions?

The lack of a unified financial market is one of the obstacles, according to Ravi Balakrishnan and Mahmood Pradhan. A single capital market will only lead to a larger pool of savings if Europe also completes its banking union, and investment will only rise if firms expect higher returns. This, in turn, requires much less fragmentation, less red tape, and more uniform regulation across the union.

Europe's largest economy underscores the malaise.

"Europe must unite to shape today's global economy, rather than be shaped by it."

Germany's economy has barely grown since 2019, while the US expanded 12 times as much—and 3 times more than the euro area. To catch up, Germany's leaders have already reformed the "debt brake," a constitutional cap on public borrowing, and must now open up the economy to future-oriented investment and overcome chronic labor shortages, say Claudia Schaffranka and Ulrike Malmandier.

Despite overall stagnation, some economies are showing greater vitality. Poland's successful economic transformation can inspire the continent today, says its finance minister, Andrzej Domański. Sweeping restructuring has turned Greece—which emerged from a debt crisis not so long ago—into one of Europe's fastest-growing economies, writes former finance minister Konstantinos Hatzidakis. And Spain has found the sweet spot between strong growth and social progress with sustainable public finances, according to its finance minister, Carlos Cuerpo.

A special report in this issue of F&D investigates the policy implications of falling fertility and rising longevity. How to manage the shrinking numbers of workers relative to retirees is a concern in many parts of the world, but especially in Europe.

Europeans know that the moment to revive their economic might has arrived. They know they must unite to shape today's global economy, rather than be shaped by it. And they can aim to do so by remaining true to their values. F&D

Gita Bhatt, editor-in-chief

Kaleidoscope

A global view, in brief

THE BIG PICTURE: After three decades of near-zero inflation, Japan is shaking off downward price pressure and showing signs that it can reach equilibrium, with inflation sustained at the central bank's 2 percent target and economic growth at the 0.5 percent potential, the IMF says in its regular April check on the state of the world's third-largest economy. *Above, visitors walk in Tokyo's Asakusa district. IMF Photo/Noriko Hayashi.*

World Economy to Dodge Recession

A SHARP INCREASE in trade tariffs will slow global growth significantly this year and next but the world economy will not sink into recession, according to the IMF's April 2025 *World Economic Outlook*.

The flagship report makes sweeping downgrades to growth projections and predicts that world trade growth will be cut in half this year to reflect a "reordering" of the global trading system, with US effective tariffs spiking to the highest rates in more than a century.

The report includes a "reference forecast," which reflects the April 2 tariffs and initial responses, under which global growth will slow to 2.8 percent this year from 3.3 percent last year. Downside risks dominate the outlook, and the probability of a world recession—global growth falling below 2 percent—has almost doubled since October, the report notes.

Pierre-Olivier Gourinchas, the IMF's economic counsellor and Research Department director, called for a stable trading system that addresses long-standing gaps in international trading rules. "Even if some of the grievances against our trading system have merit, we should all work toward fixing the system so that it can deliver better opportunities for all," he said.

"The global economy needs a clear, stable, and predictable trading environment."

—Pierre-Olivier Gourinchas, IMF economic counsellor

Overheard

"History tells us that the bigger the challenge, the more it requires us to come together."

—Mohammed Aljadaan, Saudi Arabia's minister of finance and chair of the IMF's International Monetary and Financial Committee, speaking at the end of the committee's 51st meeting

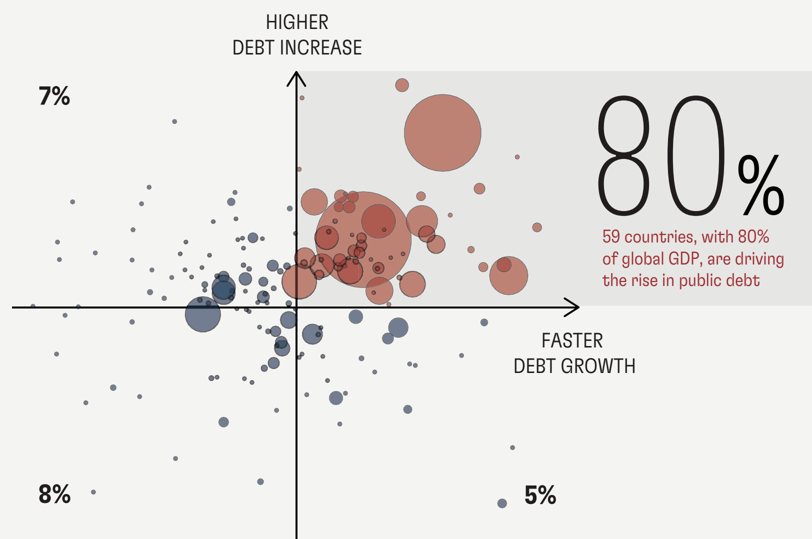
"Uncertainty is a tax without revenue."

—Lesetja Kganyago, governor of the South African Reserve Bank, speaking at the IMF's Spring Meetings

IN THE NEWS: Argentina's economy will expand by 5.5 percent this year and 4.5 percent the next, according to IMF projections. After peaking at 220 percent last year, consumer price inflation is seen falling to 14.5 percent in 2026, the lowest for more than a decade. In April, the IMF's executive board approved a new $20 billion arrangement for the Latin American nation following its stabilization policies. *Above, pedestrians walk in Plaza de Mayo in Buenos Aires. IMF Photo/Sarah Pabst.*

By the numbers

Global public debt is higher—and growing faster—than before the pandemic, fueled mainly by the world's largest economies.



SOURCES: IMF staff calculations; and IMF, *World Economic Outlook.*
NOTE: *Y*-axis shows change in debt to GDP between 2019 and 2025. *X*-axis shows the projected growth in debt to GDP from 2014–19 to 2024–29. Bubble size = 2024 share of world GDP.

Back to Basics

Politicians Strive for Competitiveness

But in most situations, productivity is the better path to prosperity

Kevin Fletcher

COMPETITIVENESS, Michael Porter remarked in *The Competitive Advantage of Nations*, his 1990 best-selling book, means different things to different people. As a member of US President Ronald Reagan's competitiveness commission in the 1980s, the American economist met business leaders who believed it was about a global strategy to compete in world markets and members of Congress who thought it meant having a positive balance of trade. Today this commonly used term continues to defy definition and to divide opinion.

If increasing competitiveness means boosting productivity, economists would agree that this is almost always and everywhere a worthy goal. But they would also note that more productivity raises a country's welfare regardless of its effects on exports and even if the country doesn't trade at all with other countries.

Competitiveness, however, implies that relativity matters—that policymakers are less concerned about their country's absolute level of productivity than about how it compares with that of other countries. If another country's productivity is on the rise, it must be bad news, because their own country is becoming less competitive. Does this reasoning stand up?

Worrying about a competitor's productivity makes sense in a zero-sum competition like soccer. If another soccer team in the league gets better, it means that my team has a worse chance of winning the championship. However, a key insight from economics is that world trade is not a zero-sum game. By allowing each country to specialize in the goods and services it can produce most efficiently, global trade increases productivity worldwide, and everyone is better off.

Terms of trade

So is it good or bad for my country if a foreign country increases its productivity? As is usually the case in economics, the answer is, It depends.

When a foreign country produces a certain good more efficiently, it typically raises the global supply of this good, reducing its price. If your country is mainly an *exporter* of this good, the lower world price for your exports will typically make your country worse off. But if your country is mainly an *importer* of this good, the lower world price means your country will likely be better off because it will now pay less for imports.

In other words, the effect of a foreign country's higher productivity depends on how it affects your country's *terms of trade*—the price of your country's exports relative to the price of its imports.

For small countries (or regions) that specialize in the production of a few goods, these effects can be large. Suppose a small country specializes mainly in the production and export of a particular type of robot that becomes obsolete when foreign competitors invent a superior robot. The economic effects on the small country could be devastating.

Economists such as Paul Krugman, however, have shown that terms-of-trade effects from changes in productivity in foreign countries are typically small for large, diversified economies such as the US, China, and the European Union. This is because large economies rely less on foreign trade. Also, the trade that does occur tends to be spread across a range of products. Consequently, productivity improvements in other countries tend to affect both import and export prices, so the net effect is modest relative to the large gains from improvements in a country's *own* productivity.

DALE CROSBY-CLOSE

Moreover, it's also typically easier for a country to affect its own productivity than that of another. This is why the focus of economic reforms in most countries should be increased productivity rather than increased competitiveness.

Export prices

A second strategy for raising a country's competitiveness is to reduce the price of its exports, which raises export sales volume. In countries with widespread collective bargaining, this can be done by keeping wage growth in check—provided businesses use the savings to hold output prices down.

Sometimes countries try to achieve a similar effect by attempting to weaken their currency—that is, changing its exchange rate so that each unit of foreign currency buys more units of domestic currency. Exchange rate depreciation is another way countries can try to reduce export prices (and wages) when measured in foreign currency, which gives their exports a competitive advantage in foreign markets.

But if a country is already near full employment, more demand for its exports will exceed its capacity to produce them. This excess demand will push up prices and wages, and the improvement in competitiveness will vanish.

To avoid this result, the government could combine currency depreciation with measures to reduce aggregate demand, such as raising taxes or cutting spending. Currency depreciation would then increase demand for exports, while fiscal tightening would reduce demand for domestically consumed goods. Together, such policies would shift employment and production toward export sectors and away from sectors that produce for domestic consumption and investment. National income would be unchanged, but national savings would be higher because the government would run larger fiscal surpluses (or smaller deficits), and domestic consumption would be lower.

Savings and investment

This example highlights a central fact of international economics: As a matter of accounting, a country's trade balance (exports minus imports) must equal the difference between its savings and investment. This is because investment is funded by savings—and if a country's savings exceed its domestic investment, the remainder must be invested in other countries. And a country will have the excess cash flow to be a net investor in other countries only if it runs a trade surplus. Conversely, countries can run trade deficits only if other countries loan them money (are net investors in them) to allow them to purchase more in imports than they sell in exports. (For simplicity, this discussion excludes capital income flows, which does not affect the key conclusions).

So if by raising "competitiveness," policymakers mean they want to increase their country's trade balance, this outcome is possible only with policies that raise national savings or reduce national investment. But is this a good idea? It depends on whether national savings and investment are where they should be, or far from it—because of policy distortions or market failures.

Legitimate concern

Sometimes weak competitiveness and savings-investment imbalances reflect major economic problems. For example, suppose lax financial sector oversight has allowed an influx of foreign capital to drive an unsustainable credit-fueled boom in consumption and speculative investment. Excessive demand for domestic consumption and investment would drive up domestic wages and prices, undermining the competitiveness of the country's exports and boosting import demand. The result? A hefty trade deficit.

In this situation, the country's lack of competitiveness (its large trade deficit) would be a source of legitimate concern: the flip side of an unsustainable credit-fueled bubble, destined to burst and inflict considerable damage.

Sometimes, though, national savings are too high, investment is too low, or both, which implies that a country is *too* competitive. For example, a country may be investing too little in public infrastructure. Spending more (and thus incurring a higher fiscal deficit) could boost the economy's productive capacity. Higher demand for domestic investment would likely increase domestic wages and prices relative to other countries and thus reduce the competitiveness of exports. But this adjustment would be part of the necessary process of shifting production capacity away from the export sector and toward the domestic investment sector. And if returns to domestic investment are higher than in the export sector, as is assumed in this case, this shift would increase the productive capacity of the economy as a whole.

To sum up, boosting competitiveness is a popular objective among policymakers. But a focus on economy-wide productivity, regardless of the effect on international trade, is often a more appropriate goal. Situations can arise in which a country's price level relative to its competitors is an economic problem leading to trade imbalances. But these situations are less common than most policymakers realize and can be difficult to identify, even with the aid of indicators economists use for this purpose. F&D

> "A key insight from economics is that world trade is not a zero-sum game."

KEVIN FLETCHER *is an assistant director in the IMF's European Department.*

Point of View

We Need a New Growth Compact

Pierre-Olivier Gourinchas

Innovation and integration can revive growth amid sweeping geopolitical change

Policymakers are grappling with how to boost growth and expand opportunities. Early in the last decade, the question was whether flagging growth was the result of years of technological stagnation. It was a different era, of course, following the global financial crisis. But now is an appropriate time to revisit that question.

Countries in the 2010s were united in addressing the aftermath of the financial crisis, and they had a common vision. Initiatives that emerged, such as prudential financial regulation, built future resilience.

Today, after the shocks of the pandemic and Russia's war in Ukraine, the geopolitical landscape is under enormous strain and consensus is more elusive. The world has avoided a severe growth crisis, but the alarming downward trend of potential growth persists. Global growth has steadily slowed, and the outlook continues to weaken.

Let's start with the diagnosis: Why is growth weakening? Economists typically decompose growth into three broad contributing factors or inputs: labor; capital (including land); and total factor productivity, a measure of how efficiently those two resources are used. Among all three, more than half of the growth lost since the crisis was driven by slowing total factor productivity growth.

The glass may seem half empty, but it's actually half full: Productivity can be raised by addressing entrenched structural constraints that hold back innovation and by exploiting recent technological breakthroughs.

Regulatory safeguards

The United States, for example, differs from most other economies in that efficiency in resource allocation has improved and contributed positively to productivity growth.

The US economy operates with sufficient flexibility that the inputs for production flow more easily to the most innovative and productive firms. In most other countries, frictions such as regulatory barriers and financing constraints reduce flexibility—and they've become more binding.

That's not to say unconditional deregulation is the answer to everything. Guardrails serve a purpose, but they must be assessed against their broader welfare cost, including stifled innovation and growth. The global financial crisis showed us the hard way that financial regulation is critical: We remove safeguards on the financial system at our peril. We saw this two years ago with the collapse of Silicon Valley Bank and a few other midsize US banks.

But some regulations protect incumbents, stifle competition, or are outdated. Argentina once strictly restricted leather exports to keep domestic prices low, a benefit to tanneries at the expense of meat-packers and ranchers. Tanneries didn't expand capacity, so meat-packers discarded hides that could have been a valuable export, helping offset chronic trade deficits. Economy-wide benefits of removing export restrictions far

GENEVIEVE SHIFFRAR

Illustration by Chantal Jahchan

outweighed the costs to the tanneries. Removing frictions the right way aids economic growth. And many countries have a lot of room to do so.

Another reason for optimism is the artificial intelligence revolution, which could transform work. AI's boost to labor productivity is uncertain, but potentially substantial, depending on how, and how much, workers use it. And much lower development costs of some newer models, including DeepSeek and Mistral, signal that the full story is far from written. Many countries can still shape the plot.

The pace of innovation is staggering, with the cost of generative AI dropping by a factor of 10 each year, according to some estimates. This could bring about substantial growth, but we must also manage the societal transformations it might induce.

So there's hope. Various policies—from reforms aiding labor and capital allocation across firms to technological breakthroughs—could rekindle medium-term growth.

Global integration

But we must also recognize the shifting geopolitical landscape. This has important implications for economic growth given its implications for global integration.

World trade has increased fivefold in real terms since 1980, and its share of global output has expanded to 60 percent from 36 percent. This was supported by important reductions in trade costs that helped expand global value chains, a strong driver of productivity gains and goods exports since the early 1990s.

Increased trade integration helped fuel a spectacular rise in global living standards. Lower trade costs increased global GDP by 6.8 percent in real terms between 1995 and 2020. Low-income countries saw an even greater rise, of 33 percent.

Over the past 15 years, however, threats to the free flow of capital, goods, and people have intensified as geopolitical risks have grown. Conflicts are proliferating, alliances are changing, and countries are raising trade and migration barriers.

Despite such headwinds, global trade has proved remarkably adaptable. It has remained constant in relation to economic output, which means the impact of geopolitical shifts has been muted at the global level. The composition of trade is changing rapidly, however, as an important realignment takes place.

Multinational firms responded to trade restrictions on their exports by moving production to connector countries—notably Mexico, Morocco, and Vietnam—that belong to neither Western nor China-led blocs and trade freely with both. This is an important difference from past episodes of geopolitical fragmentation, like the Cold War, when trade diversion via connector countries was much more limited. One reason for that difference is precisely that the connector countries have already moved up the value chain, benefiting from earlier trade integration.

Emerging markets are also critical. With larger economies and greater global stature, thanks to deeper integration and arduous reforms, they're permanent fixtures on the global economic stage. As advanced economies turn increasingly inward, emerging markets have an important stake in fending off global economic fragmentation.

However, while connector countries support global trade and investment and attenuate the costs of fragmentation, there's still a price to pay. Stretched supply chains can be more inefficient and vulnerable. And more opacity in trade and financial flows makes spotting risks harder. Ultimately, too much trade disruption will diminish global growth and prosperity.

Fostering trade growth

While trade and financial integration helped lift growth momentum, not everyone benefited equally, especially in advanced economies.

Although there's broad agreement that trade integration can hurt some categories of workers and communities disproportionately, our analysis shows a more nuanced story. Globalization had a much smaller impact than technological progress on rising inequalities within countries.

Still, trade shocks can hurt, and perceptions of lost jobs also come into play. What may matter more is the speed of economic transformation, leaving little time for economic systems and safety nets to adapt. And this brings me back to AI and the blazing pace of change. Unattended, this may cause major dislocations—and the associated political blowback.

We are left searching for ways to reinvigorate growth amid rising geopolitical strains and heightened uncertainty around the future of global integration and technology.

Policy can play a central role, especially structural reforms. Easing worker mobility across employers, industries, and regions minimizes trade adjustment costs and promotes employment. Compensatory measures, especially for the most vulnerable, and helping workers adapt and sharpen skills are also useful—and even boost public support for government policies, as our research shows.

This brings me to the shared vision at the core of our institution. The IMF was born into a world at war when delegates in Bretton Woods, New Hampshire, agreed to an unprecedented framework for global economic cooperation in which countries helped themselves by helping each other. We were charged with three critical missions, one of which was to facilitate the balanced growth of international trade and thereby contribute to high levels of employment and real income as primary objectives of economic policy.

This is a delicate balancing act, which we have striven to achieve for the past eight decades through our surveillance and crisis-fighting mandates. Trade integration and expansion are by no means ends in themselves; they are important to the extent that they support employment and improved living standards. Carefully calibrated policy can help attain these goals. F&D

PIERRE-OLIVIER GOURINCHAS *is the IMF's economic counsellor and director of the Research Department.*

This article draws on the author's lecture at the Oxford Union on February 24, 2025.

Reclaiming a Policy Role for Economists

Karen Dynan

Acknowledging missteps, listening well, defending data, and avoiding jargon will help the profession engage

Economists have long helped shape policy by offering analysis to guide decisions on trade, taxation, regulation, and economic stability. At times, mainstream economic expertise has led major policy debates, influencing governments around the world.

Today, however, economists are increasingly sidelined. While they still dominate the staff of central banks and multilateral institutions, political leaders are more likely to prioritize ideology and expediency over economic analysis. Meanwhile, public trust in economists has been eroded by high-profile policy failures, growing political polarization, and mounting challenges to expert authority from new and often unreliable information sources.

Yet economic expertise remains critical to improving policy outcomes. The crises of the 21st century have shown how macroeconomic mismanagement can create widespread hardship and social dysfunction, with profound political consequences. At the same time, economists have amassed a rich body of evidence on what works in areas like poverty alleviation, education, and labor markets—insights that, if better integrated into policymaking, could lead to better outcomes.

To regain influence, economists must engage more effectively with policymakers and the public. Failure to adapt risks further marginalization in important policy debates at a time when economic expertise is needed more than ever.

Hard truths

Economists bring essential tools to policy conversations: familiarity with relevant research and tools to help anticipate how different policy options will play out. But there is a fundamental reason economists can sometimes be unpopular: Their thinking is grounded in trade-offs and constraints. Economists explain that a choice must be made between A and B, while politicians (and the public) often want both. Policymaking would be far easier if we could cut taxes and spend more without raising public debt, contain inflation without raising interest rates, expand global trade without losing jobs. But such trade-offs are unavoidable, even if acknowledging them is often politically inconvenient.

Economists must embrace this mindset. They need to be in the room where policy conversations happen because it leads to better decisions. And decision-makers should want to hear these realities—after all, no one makes a major personal purchase or investment without weighing costs. Even if noneconomic considerations drive the ultimate decision, leaders informed about the economic trade-offs will be better equipped to face critics.

Policymakers' reluctance to accept hard truths is not the only reason economic expertise has been sidelined. Some problems are of economists' own making. Addressing them can help preserve and increase the influence of economic expertise on policymaking. There are four ways to do so: acknowledging and learning from missteps, listening to people's concerns, upholding data integrity standards, and engaging more effectively with politicians and the public.

Learning from missteps

Public skepticism about mainstream economics is not baseless. The profession has at times been associated with avoidable hardship. Before the 2008 financial

MARTHA STEWART

Illustration by Chantal Jahchan

"Simplicity is accessibility, not condescension."

crisis, most economists were slow to recognize the US housing bubble. Even after it became evident, many underestimated how much its collapse would destabilize the broader financial system.

The postpandemic inflation surge provides a more recent example. Many economists placed too much weight on transitory factors and underestimated how persistent inflation would be. To be sure, the causes were complex and varied, and shocks like Russia's war in Ukraine were unanticipated. However, in countries where excessive demand was a contributing factor, different economic policy choices might have mitigated the inflation surge.

How much blame economists deserve is debatable, but the loss of public trust is real. The right response is not to discard economic frameworks but to clarify how they were misapplied. For the financial crisis, that work has been done—through extensive research on market failures, poorly designed regulation, and behavior that fueled risk taking. Understanding postpandemic inflation is ongoing and must remain a priority.

More broadly, economists must not let fear of accountability—or political bias—get in the way. The inflation debate, for instance, has been clouded by ideology, making it harder to reach objective conclusions. Transparency, openness to revision, and honest engagement with evidence are the best ways to show that economics remains a vital discipline.

Listening to concerns

Economists also need to take what people say seriously. The backlash against China's rapid integration into global trade is a cautionary tale. Economic theory suggests that displaced workers would find new opportunities. But many could not or would not move because of the cost of housing, social ties, or other barriers. These frictions contributed to more persistent disruption—and greater backlash—than expected.

Similarly, public reaction to the inflation surge of the early 2020s suggests that the costs of this episode exceeded what standard economic thinking would predict. Research has demonstrated that inflation imposes large cognitive costs through the attention required to evaluate whether prices and wages are fair and the need to adjust financial plans. Statements like "wages tend to keep up with inflation" may be true on average, but they obscure important variations. In the United States, for example, wages rose faster for many lower-income workers in the early 2020s—but gains were far from universal.

Recognizing these concerns does not mean abandoning economic principles. It means incorporating a more nuanced understanding of how people experience economic change. Dismissing such concerns weakens economists' credibility and reduces the likelihood of good policy ideas gaining traction.

Data integrity

A hallmark of economic research is rigorous use of data, and economists should uphold those same standards of integrity when participating in public debate. The rise of social media, along with better access to data and visualization tools, has made it easier for everyone—including economists—to misuse statistics to bolster thin arguments. But giving in to the temptation to win arguments this way in the moment risks undermining trust in economic analysis over the long run.

Casual use of data can also weaken trust in official statistics. Pointing to a discrepancy between a government series and another source without acknowledging differences in methodology, coverage, or definitions can give the false impression that official indicators are flawed or manipulated. In an era when statistical agencies face growing political and budgetary pressures, this kind of careless comparison risks the ongoing availability of high-quality, unbiased government data.

Engaging effectively

Economists need to recognize that the policies they see as optimal may not be—in the context of the broader considerations involved in the political process. In those cases, economists should offer alternatives that respect those considerations. Flexibility is not a retreat from principle—it's recognition of the realities of governing.

Economists also need to communicate clearly. Technical jargon may project an aura of expertise or exclude nonexperts from debate, but it is not a sustainable strategy for influence. Economists should use plain language and avoid unnecessarily complex graphics. Simplicity is accessibility, not condescension.

Finally, economists must talk to the broader public, not just to policymakers. Politicians respond to their constituents. The profession must earn public trust if its advice is to shape policy, and that means using the channels and tools that reach everyone.

Economists will never be universally popular, nor should they strive to be. Their role is to provide rigorous analysis that improves decisions, not tell people what they want to hear. But to remain influential, they must admit mistakes, listen better, defend data, and communicate effectively. Policymakers need economic expertise, even when they resist hearing it. The challenge is not to make economics popular—but to make it relevant, accessible, and respected in the policy conversation. F&D

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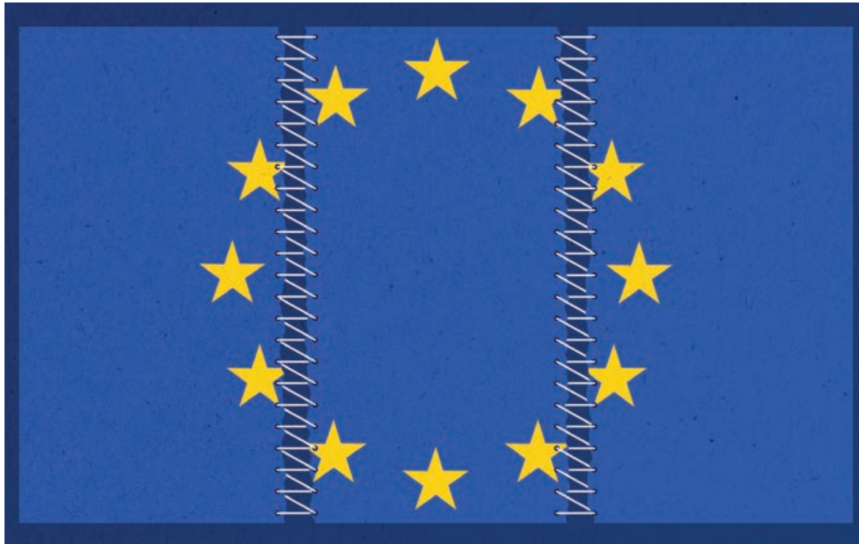
Europe's Future Hinges on Greater Unity

Simon Nixon

But first the EU must overcome distrust between its member states and in its institutions



Europe, as Jean Monnet, one of the founding fathers of the European Union, famously predicted, has been forged by crisis. But what makes the crisis engulfing the continent today so grave is that it has three interlocking dimensions: geopolitical, economic, and institutional. It's a crisis that cannot be resolved solely by more borrowing or a blizzard of new rules from Brussels. It requires a complete change in mindset. Are Europeans really prepared for such a leap?

Europe's first challenge is to ensure continued access to the resources it needs to power its economy in a world where the old rules-based system is breaking down. The EU is both a product of the global rules-based order and, as a region that lacks resources of its own, deeply reliant on it. Demand for critical minerals necessary for clean energy technologies is expected to rise fivefold by 2040, yet the EU's share of global production is less than 7 percent. Production of most minerals is highly concentrated in one or two countries. China, meanwhile, dominates refining—to the extent that it even refines Europe's own modest mining output.

The EU has sought to diversify access to critical minerals through trade agreements. But these remain vulnerable to a combination of trade wars, rising export restrictions, a desire by developing economies to capture more of the value chain, and the absence of a functioning dispute resolution mechanism at the World Trade Organization.

Securing access for US companies to critical minerals is a centerpiece of President Donald Trump's America First foreign policy. But European businesses—held back by environmental, social, and governance rules and concerns over political stability and the rule of law—are barely present in the critical minerals supply chain. Can rule-bound Europe develop the geopolitical and industrial strategies to compete in this more contested global order?

Deeper integration

Europe's second challenge is to deepen economic integration so as to boost productivity and competitiveness. Reports by Enrico Letta and Mario Draghi set out with brutal clarity the shortcomings of the single market and provide clear blueprints for reform that the European Commission has vowed to deliver. Both former Italian prime ministers stressed the need to cut red tape and extend the single market in sectors that have proved resistant to integration, including defense, energy, telecoms, and finance.

Yet the EU has been debating these matters for years, if not decades. The EU first announced a better regulation agenda in 2002 and launched another,

COURTESY SIMON NIXON

Illustration by Chantal Jahchan

“The real barrier to deeper integration is not a lack of ambition on the part of Brussels but protectionism by member states.”

the Regulatory Fitness and Performance Programme (REFIT), in 2015. Similarly, it’s talked about deeper integration in financial services for almost as long as the single market has existed. The Giovannini reports set out proposals in 2001 and 2003; many of these reappeared as part of the push for a capital markets union in 2015. Now the project has been rebadged as a savings and investment union. Yet the EU still has 18 clearing and 21 settlement markets, compared with just one of each in the US. Fragmentation in market infrastructure is reflected in fragmented products and services.

Gold-plating

The real barrier to deeper integration is not a lack of ambition on the part of Brussels but protectionism by member states. Often this takes the form of “gold-plating”—member states pile on local requirements when transposing EU single-market directives into domestic law. The Commission has promised to counter such practices. Koen Lenaerts, the president of the European Court of Justice, reminded commissioners in a speech in January that they have the power to bring cases against offending member states. But is the Commission really prepared to take legal action against governments over gold-plating?

What makes the push for deeper integration in defense, energy, telecoms, and finance harder is that these intrude on core aspects of sovereignty. Take financial services. No one disputes that establishing deep capital markets is vital to channeling Europe’s vast savings—much of which sits in bank accounts or is invested in overseas funds—into supporting European businesses. Yet a true savings and investment union requires more than simply establishing a new single EU securities regulator. It requires harmonization of national insolvency rules, corporate law, and aspects of tax law, as well as promotion of pan-European pension vehicles. Recognizing the political impossibility of such harmonization, the Commission has resurrected the idea of a 28th legal regime as an alternative—a solution first proposed in 2009 but which so far has amounted to little.

Meanwhile, it’s striking that completion of the EU’s banking union, which would have been at the top of almost every policymaker’s list of single market priorities at any point over the past decade, is almost entirely absent from discussions about how to revive Europe’s competitiveness today. It’s as if measures such as a single banking rule book, a backstop for the Single Resolution Fund to restructure failing lenders, or a common deposit insurance program have simply been put in a box marked “too difficult.” Yet without thriving cross-border banks to underpin European capital markets, a savings and investment union is unlikely to fulfill its potential.

A related concern is that while a single market might deliver economies of scale, member states fear that the disappearance of domestic industries would expose them to new risks. Would a genuine capital markets union leave some member states vulnerable to an exodus of domestic savings from their financial system? If the European defense sector were consolidated, would member states still be able to access weapons in a crisis? If national barriers to mobile telecom market consolidation were removed, would governments lose control over a vital piece of infrastructure? Would an integrated energy market leave countries vulnerable to higher prices or even shortages if a crisis hit elsewhere on the continent?

That points to the third challenge, which is a lack of trust both between member states and in the EU’s institutional processes. The EU has long been hamstrung by what Fabian Zuleeg, chief executive of the European Policy Centre, a think tank in Brussels, calls the unity-ambition dilemma. The bloc has always sought to proceed as far as possible by unanimity, even when it’s not strictly needed, even at the expense of some of its integrationist goals. But that unanimity has become even harder to achieve as politics at both the national and European levels has become more fragmented. Indeed, Europe’s apparent inability to rise to its economic challenges only further undermines support for EU integration.

Improvised arrangements

The problem is compounded by the fact that some of the key players in addressing Europe’s most pressing challenges lie outside the EU. Britain especially has a potentially important role to play in pan-European defense, capital markets, and energy sector integration. Part of the answer may lie in bypassing EU institutional processes to establish coalitions of the willing in areas such as defense and rely instead on improvised intergovernmental arrangements. But these must be flexible enough to accommodate changes in government and could potentially create new legal complexities and exacerbate fragmentation.

Europe has taken many large and seemingly impossible leaps forward in integration in response to shocks over the past 80 years. Faced with a shock that poses profound risks to security and prosperity, one should be wary of betting against the continent’s overcoming today’s geopolitical, economic, and institutional challenges. But if Europe is to be a pole in the new multipolar world, it must forge a unity beyond anything it has previously contemplated—and quickly too. F&D

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TRADE RECKONING

Stalled trade integration and rising tariffs are testing global economic resilience

FOR DECADES, world trade expanded rapidly as countries lowered tariffs and embraced globalization. Tariff rates fell dramatically worldwide, converging toward the low levels of the United States.

But progress has stalled. Since the 2008 financial crisis, trade openness has stopped rising and global imports have leveled off at about a third of GDP. Trade tensions have escalated this year, and some major economies are reversing course, with US tariffs in April reaching the highest level in over a century. Other countries have responded.

This new trade landscape has serious consequences for the global economy. Many smaller, trade-reliant countries are more exposed to these shifts in trade patterns. Trade policy uncertainty is off the charts, making it harder for businesses everywhere to plan ahead.

The best strategy for economies to navigate uncertainty and improve growth potential is to strengthen resilience and competitiveness at home. This means fortifying macroeconomic fundamentals by rebuilding fiscal buffers, maintaining price stability, and ensuring financial soundness. Reforms to boost productivity, lower barriers to private enterprise, and attract investment can help economies adapt.

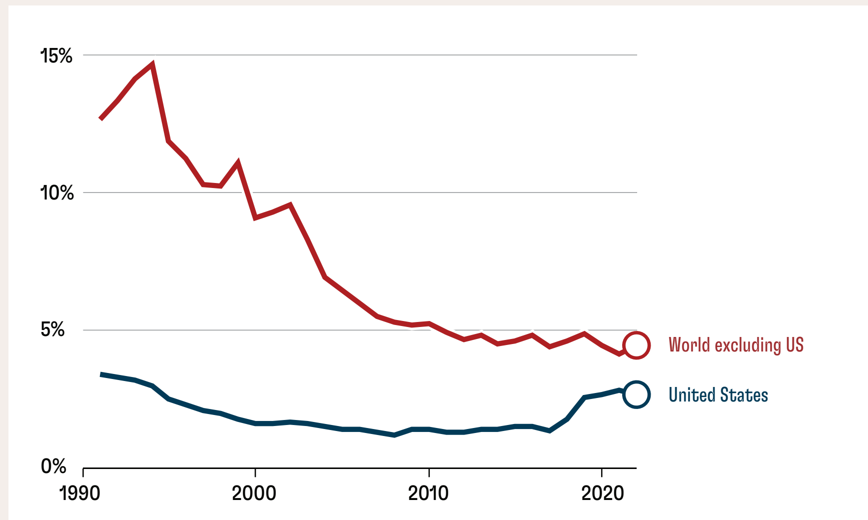
It is equally important to address internal and external imbalances, particularly large deficits and surpluses, which have contributed to the rise in tensions.

The task now is not to preserve the old but to build something new—a global economy that is more balanced and more resilient. F&D

This article draws on an April 17, 2025, speech by IMF Managing Director **KRISTALINA GEORGIEVA.**

Stalled descent

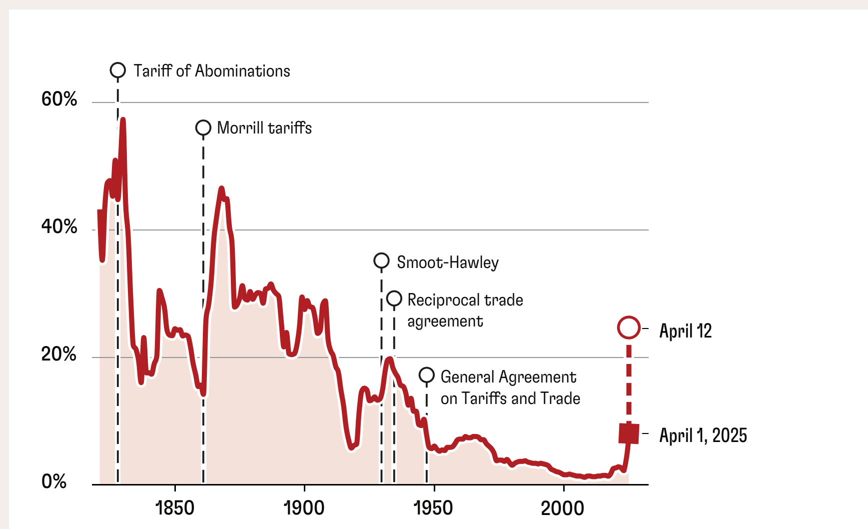
The global effective average tariff rate for decades declined toward the US level, but it has long since stalled.



SOURCES: World Bank; and IMF staff calculations.

Tariff rebound

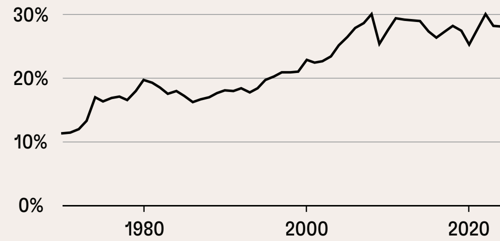
The US effective average tariff rate has hit a century high.

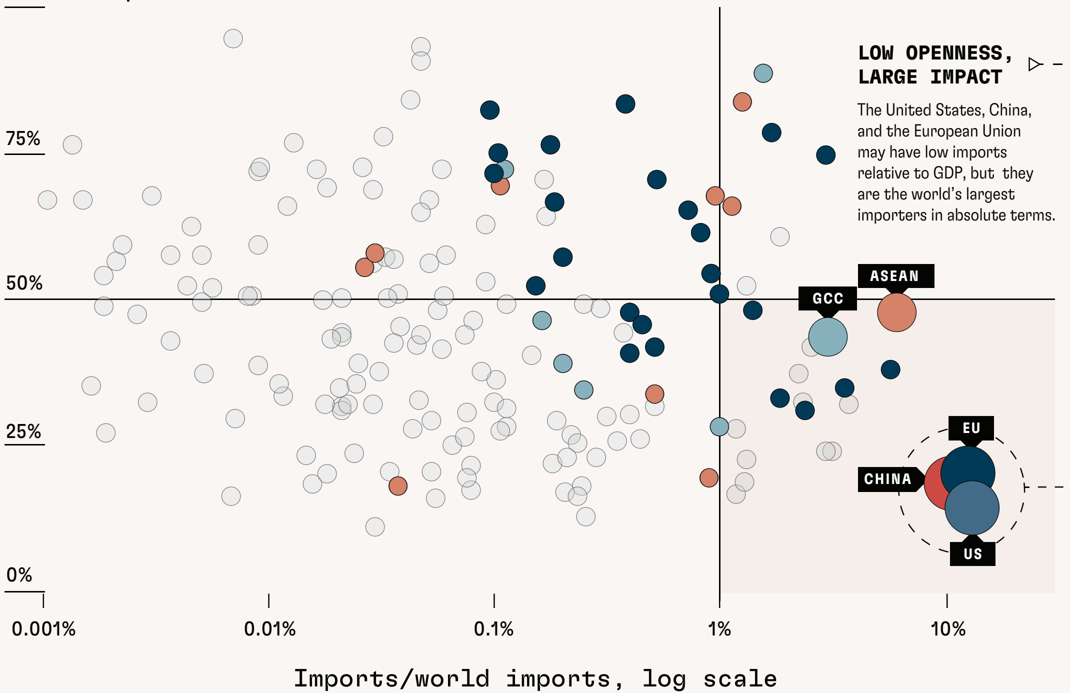


SOURCES: The White House; US Bureau of Economic Analysis; and IMF staff calculations.

Under pressure

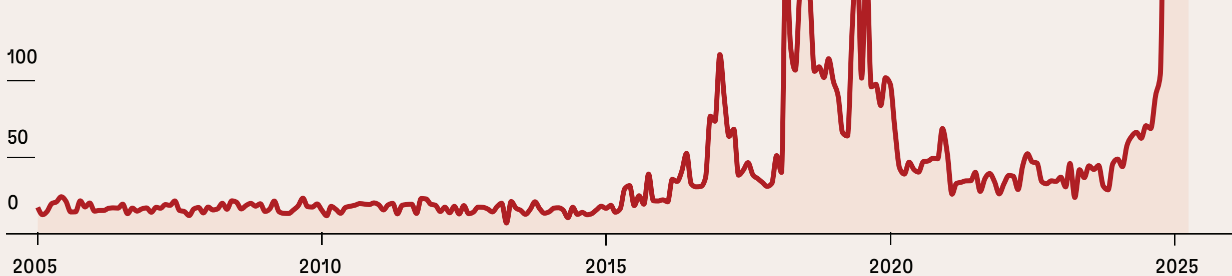
Trade openness seems to have peaked and is poised to decline amid unprecedented tariff policy uncertainty. Despite being relatively closed economies, the United States, China, and the European Union are the world's largest importers. Shifts in their trade patterns create significant spillovers. By contrast, smaller advanced economies and most emerging markets are more open to trade and rely on it more for growth.





Off the charts

The Trade Policy Uncertainty Index has skyrocketed.



SOURCES: ASEANstat; Eurostat; IMF; Caldara and others. 2020. "The Economic Effects of Trade Policy Uncertainty"; and IMF staff calculations.
NOTE: The scatter plot uses 2024 data. Association of Southeast Asian Nations (ASEAN), EU, and Gulf Cooperation Council (GCC) imports exclude intra-bloc imports. ASEAN intra-bloc imports are based on latest available data for 2023. Trade Policy Uncertainty Index uses monthly data; April reflects average to April 14. October 2024 = 100.

EUROPE'S INTEGRATION IMPERATIVE

The case for closer economic union has become more compelling as external challenges multiply

Alfred Kammer

Illustration by Brian Stauffer

Europe faces the most daunting set of challenges since the Cold War. Russia's invasion of Ukraine, the first major war of aggression on European soil since 1945, has forced a fundamental questioning of old certainties. Geopolitical ructions have shaken supply chains, disrupted trade, and exposed serious energy-security vulnerabilities. The transatlantic alliance, which has provided security for the past 80 years, is under pressure. Europe is committed to increasing defense spending to fend off foreign foes but must also protect the public services and welfare systems that underpin its social contract.

These challenges would be much simpler to resolve if economic growth were strong and public money plentiful. But Europe's postpandemic recovery has run out of steam, and stagnant productivity is dragging down medium-term growth prospects. Countries face significant strains on public finances, with rising spending pressures. Exporters face stiff tariffs to sell goods to their most important foreign market, the United States. Moreover, Europe's working-age population is set to shrink by 54 million by the end of this century, making it all the harder to generate growth and lift living standards.

Yet, if history is a guide, Europe can turn adversity to advantage. After World War II, European nations faced the monumental task of rebuilding their economies, restoring political stability, and preventing future conflict. They met these challenges through economic integration and political cooperation, aspiring to the free movement of goods, services, people, and capital across borders. This unique historical experiment, which later developed into the European single market, stemmed from a core belief: Stronger economic connections between nations bring peace, prosperity, and stability.

Postwar reconstruction played an essential part. The Marshall Plan may be better known, but other initiatives—the European Payments Union of 1950 and the European Coal and Steel Community of 1952, for instance—proved equally pivotal. They established essential foundations and strengthened cross-border cooperation. By 1957, six nations had formed the European Economic Community, putting the continent on a path toward the single market.

Eighty years on, the single market has made remarkable strides. Comprising 27 nations and 450 million people, it lies at the heart of the European Union. And it has turned the EU into a global economic powerhouse, accounting for about 15 percent of world GDP in current US dollars, comparable only to the US and China. This prosperity has not come at the expense of its core values or quality of life. Today, many European nations rank high in life satisfaction, safety at work, social protection, and life expectancy. And Europe has continued to put a strong emphasis on international cooperation, be it in trade or climate policies, even during the most trying times.

Yet the single market remains incomplete. Its full economic potential is limited by persistent barriers and national priorities in some sectors and industries (see "Europe's Future Hinges on Greater Unity" in this issue of F&D). Moving toward a shared form of economic and political sovereignty is never easy—nor should it be. Indeed, this is the main reason the single market has always been seen as a work in progress. Strategically important sectors—energy, finance, and communications—were excluded from full integration from the start. But as recent reports by former Italian Prime Ministers Mario Draghi and Enrico Letta make clear, the case for completing and deepening the single market has become even more compelling as external challenges multiply. Europe needs more growth and more economic resilience. A more fully integrated economy can deliver both.

The EU has made significant progress freeing up trade between its member states, but plenty of obstacles remain. High trade barriers within Europe are equivalent to an ad valorem cost of 44 percent for manufactured goods and 110 percent for services, IMF research shows (2024). These costs are borne by EU consumers and companies in the form of less competition, higher prices, and lower productivity.

"If history is a guide, Europe can turn adversity to advantage."

The EU is also a long way from capital market integration, with cross-border flows frustrated by persistent fragmentation along national lines. The total market capitalization of the bloc's stock exchanges was about $12 trillion in 2024, or 60 percent of the GDP of the participating countries. By comparison, the two largest stock exchanges in the US had a combined market capitalization of $60 trillion, or over 200 percent of domestic GDP. Limited EU-level harmonization in important areas, such as securities law, hampers growth by preventing capital from flowing to where it's most productive.

This is one reason Europe has fallen behind in the adoption of productivity-enhancing technologies and its productivity levels are low. Today, the EU's total factor productivity is about 20 percent below the US level. Lower productivity means lower incomes. Even in the EU's largest advanced economies, per capita income is about 30 percent lower than the US average (see Chart 1).

Low-growth firms

Europe's wide productivity gap warrants a closer look. My colleagues recently examined the performance of European companies with the potential to become macroeconomic growth engines—established productivity leaders as well as young high-growth firms (Adilbish and others 2025). The findings reveal significant innovation and productivity gaps relative to the global frontier for both groups.

Not only do Europe's leading companies lag their US competitors, but they are falling further behind over time. This is true across all sectors, but especially for tech. While the productivity of US-listed tech firms has increased by about 40 percent over the past two decades, European tech firms have seen almost no improvement.

One reason could be that US firms are simply trying harder: They have tripled their research and development spending to 12 percent of sales revenue, three times European companies' ratio, which has languished at an average of 4 percent in recent decades.

The future would look brighter if Europe could hope for young high-growth firms to reduce the innovation and productivity deficit. Alas, the EU has few such companies. And they have a substantially smaller economic footprint than those in the US, where younger firms account for a far larger share of employment.

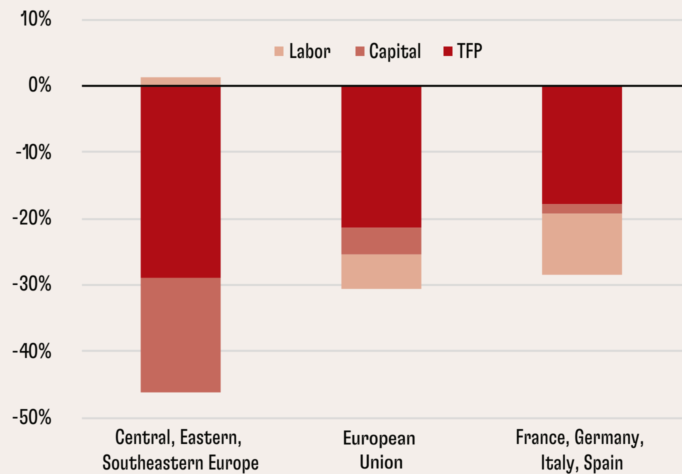
In other words, the EU has too many small, old, and low-growth companies. About a fifth of European employees work in microfirms with 10 people or fewer, about double the US figure. And while the average European firm that has been in business 25 years or more employs about 10 workers, compara-

CHART 1

Productivity problem

Living standards in advanced EU economies are about 30 percent lower than in the US due to weaker productivity.

(GDP per capita difference with the US, purchasing power parity, 2024)



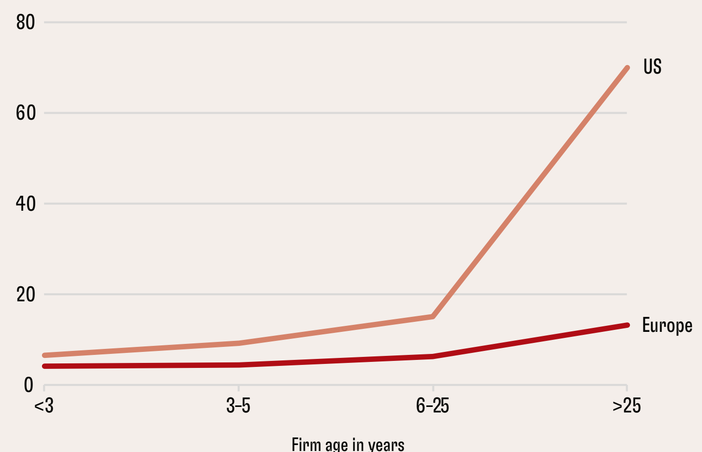
SOURCE: Adilbish and others 2025. **NOTE:** TFP = total factor productivity.

CHART 2

Small and old

A European company that has been in business 25 years is one-eighth the size of a similarly aged US firm.

(average number of employees, 2010–20)



SOURCE: Adilbish and others 2025. **NOTE:** Europe includes Belgium, Croatia, Czech Republic, Denmark, Hungary, Italy, The Netherlands, Slovenia, Spain, and Sweden.

ble US companies employ 70 (Chart 2).

What explains these stark differences? Our research points to Europe's still-fragmented consumer markets for goods and services. But capital and labor markets are also at fault, further limiting companies' incentives to scale up and their abilities to do so.

Europe's bank-dominated financial markets favor physical collateral for their loans. But young companies, especially in the tech sector, typically have fewer physical and more intangible assets, such as patents. The continent needs capital markets to channel savings into large-scale long-term investments in risky but potentially revolutionary ideas.

Scarcity of high-skilled workers is another problem. This reflects both high barriers to cross-border labor mobility and the overall lack of human capital needed for innovative sectors. This is compounded by many countries' aging populations, which could make the new ideas that produce young and high-growth firms harder to come by.

Stronger single market

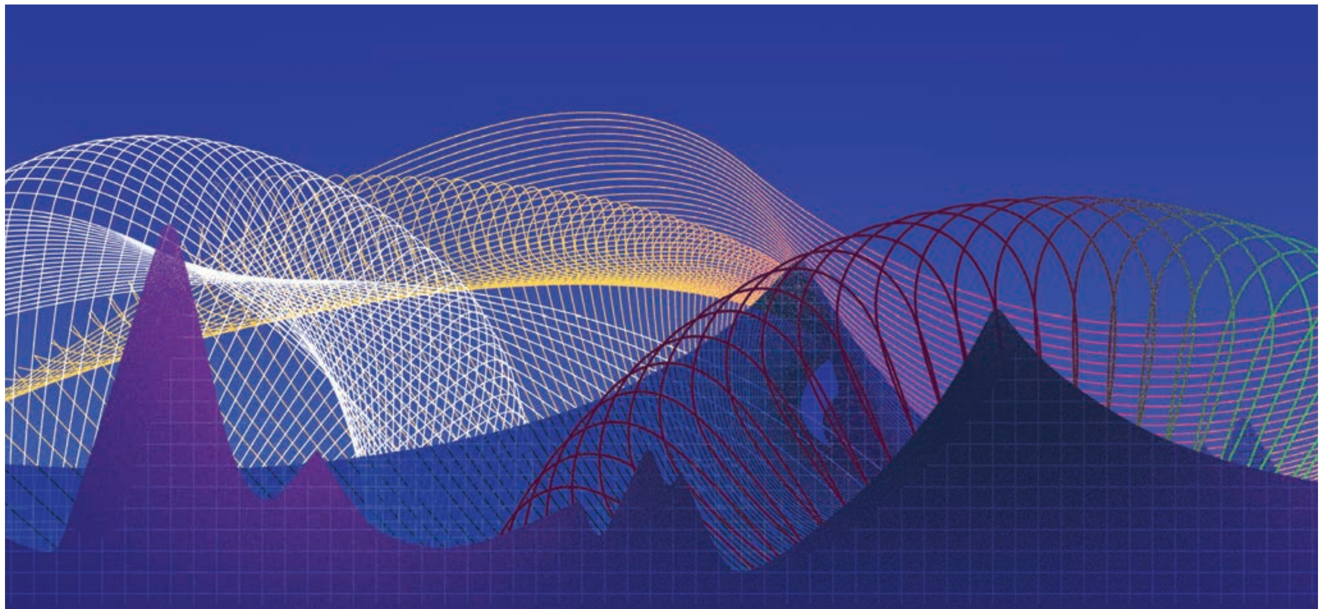
For now, at least, Europe's productivity gap does not stem from a shortage of innovative ideas. It remains an important incubator for innovation in foundational science and technology, and its companies continue to push the intellectual frontier, especially in fields like pharmaceuticals and bioengineering (see "Europe's Innovators Are Waking Up" in this issue of F&D). Even so, there is a troubling trend of innovative European firms taking their talents to more dynamic markets elsewhere, with future "unicorn" companies valued at more than $1 billion leaving the EU for the US at a rate that is 120 times faster than the other way around, according to research by Ricardo Reis, of the London School of Economics.

Europe certainly has enough savings available to finance higher investment. At about 15 percent of GDP, the EU's household saving rate is about three times that of the US. Yet Americans invested $4.60 in equity, investment funds, and pension or insurance funds for every dollar invested in such assets by Europeans in 2022.The fundamental issue is the EU's more limited ability to channel ideas and capital into productive uses within its borders. Put simply, the continent's fragmented internal market has failed to realize a lot of income growth.

All this underscores the urgency of completing the single market agenda. Sound macroeconomic policies, including securing price stability to provide certainty to investors and meeting spending challenges without upending fiscal sustainability, are necessary preconditions. Next, countries must step up reforms in the core areas of the single market.

Lowering internal trade barriers, in goods and especially in services, must be a priority. It would incentivize firms to undertake R&D and other high-risk, high-reward investments. The EU could raise its GDP by 7 percent if it reduced internal barriers for goods trade and multinational production by 10 percent, our research shows. There is plenty of room for improvement by opening protected sectors, liberalizing services, and harmonizing regulations.

These efforts must be accompanied by progress toward an integrated capital market, or savings and investments union (see "Europe's Elusive Savings and Investment Union" in this issue of F&D). Critical reforms—including reviewing the prudential regime for insurers and harmonizing oversight of capital markets—could channel the EU's substantial savings



"Europe needs more growth and more resilience. A fully integrated economy can deliver both."

into much-needed equity financing for all companies.

Young high-growth firms would benefit significantly from the greater availability of capital and lower financing costs—capital that market integration could deliver, especially if paired with national reforms to unleash venture capital investment.

At the same time, countries must be careful not to undermine the single market and all its opportunities with poorly conceived industrial policy. Industrial policy can play a role if it corrects market failures—by pushing companies to become greener or to take up transformative technologies, for example. But protecting mature industries from sweeping structural transformation is not sensible. Europe must look forward, not backward.

Even carefully targeted industrial policy can backfire by diverting trade and production patterns away from established areas of comparative advantage. Countries must coordinate industrial policies or, better still, agree to set them at the EU level (Hodge and others 2024).

Greater resilience

A fully integrated single market would also strengthen Europe's economic resilience in today's perilous, shock-prone world. Companies that serve more customers in more countries are less affected by economic ups and downs at home. The same principle applies to personal investment portfolios when financial market barriers are lowered and people spread their holdings across the whole EU. The benefits of risk sharing can be sizable, but diversification is still limited compared with the US.

Similarly, the EU could reduce its dependence on imported oil and gas, protect itself from volatile global energy markets, and lower prices for consumers with a more integrated energy market.

To take full advantage of EU reforms, national efforts must match regional ambition. Labor markets, human capital, and taxes are in the greatest need of reform to promote growth, our forthcoming research shows. Advanced economies would benefit most from deregulating product markets, deepening credit and capital markets, and promoting innovation. For many central, eastern, and southern European countries, the top priorities are investing in skilled labor, removing red tape, and improving governance. The growth gains could be sizable.

Power of integration

The 2004 enlargement welcomed Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic, and Slovenia to the EU. Two decades later, GDP per person in those countries is more than 30 percent higher than it would have been without accession. For the countries already in the EU, GDP per person is 10 percent higher than it would have been without expansion (Beyer, Li, and Weber 2025).

This leap in living standards underscores the powerful impact of integration. Current reform proposals are a start, but more ambition is needed. A stronger single market would improve the EU's economic outlook, support its policy priorities, and strengthen its resilience, ensuring that the region remains a global leader in innovation, sustainability, and quality of life. It's an opportunity Europe cannot afford to squander. F&D

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REFERENCES

Adilbish, O., D. Cerdeiro, R. Duval, G. Hong, L. Mazzone, L. Rotunno, H. Toprak, and M. Vaziri. 2025. "Europe's Productivity Weakness: Firm-Level Roots and Remedies." IMF Working Paper 25/40, International Monetary Fund, Washington, DC.

Beyer, R., C. Li, and S. Weber. 2025. "Economic Benefits from Deep Integration: 20 Years after the 2004 EU Enlargement." IMF Working Paper 25/47, International Monetary Fund, Washington, DC.

Hodge, A., R. Piazza, F. Hassanov, X. Li, M. Vaziri, A. Weller, and Y. Wong. 2024. "Industrial Policy in Europe: A Single Market Perspective." IMF Working Paper 24/249, International Monetary Fund, Washington, DC.

International Monetary Fund (IMF). 2024. *Regional Economic Outlook for Europe: A Recovery Short of Europe's Full Potential.* Washington, DC, October.

MAKING GERMANY GROW AGAIN

Ulrike Malmendier and Claudia Schaffranka

Long-term, future-focused investment can rescue Europe's largest economy from stagnation

More than a quarter century after *The Economist* first dubbed Germany the "sick man of Europe," the label applies again.

And this time, the illness is a chronic condition, requiring a long-term treatment plan. The incoming government's fiscal plan to fund infrastructure investment and increased defense spending is a start. But Germany must also open its economy to future-oriented technologies, push for greater market integration in Europe, and build stronger capital markets at home.

For the past five years, Germany's economy has been stagnant, growing by just 0.1 percent since 2019. Over the same period, the US economy has grown by 12 percent and the euro area as a whole by 4 percent. The forecast does not look any brighter. The German Council of Economic Experts, an independent panel that advises the federal government, expects growth to remain sluggish for the next two years, with potential output increasing by only 0.4 percent per year.

When *The Economist* first called Germany a sick man in 1999, the country was plagued by high unemployment and low economic growth. Then Germany made a recovery. Major labor market reforms in 2003–05 helped reduce unemployment significantly. Wage restraint in the 2000s lowered relative unit labor costs and increased price competitiveness.

The Alps are seen as the sun sets over Munich, Germany.

GETTY IMAGES/WESTEND61

But Germany's challenges are different now. The economy does not lack jobs; it lacks workers. In the next 10 years the situation will worsen as 20 million workers are expected to retire while only 12.5 million enter the labor market. Older workers are less likely to work, and those who do, will work fewer hours. The aging population will worsen the labor crunch the country is experiencing today, further driving up labor costs.

Labor costs are in fact the main driver of the decline in German price competitiveness, even more so than rising energy costs. Sluggish productivity growth, combined with rising wages, has led to a deterioration in unit labor costs, also compared with other major European economies such as France and Spain.

Also holding Germany back is a high degree of employment stability, reinforced by measures such as "short-time work," which keeps people on payrolls at reduced hours. While this may sound like a positive for the working population, it has in fact slowed structural change and reallocation to more productive sectors, as there is less pressure on companies and employees to adapt to a changing economy.

Manufacturing decline

We see these adverse factors at work in particular in the manufacturing sector, once the motor of German economic growth but now in continuous decline since 2018. Even when foreign demand, especially from China, picked up again after COVID, manufacturing and other core industries did not benefit, and exports failed to rise accordingly. The loss of competitiveness, combined with rising trade fragmentation, the threat of US tariffs, and increasing competition from China in global markets, will make it more difficult for Germany to regain its footing.

High energy costs matter, too. Although Germany weathered the spike in natural gas and electricity prices following the Russian invasion of Ukraine, output in energy-intensive industries has been declining almost continuously since the start of 2022. Energy prices remain elevated, not only historically and relative to the US, but also relative to many neighboring European countries. This has made Germany less attractive for new energy-intensive industries, such as artificial intelligence, which relies on data centers that consume vast quantities of power. Estimates by the International Energy Agency point to a potential doubling of global electricity demand from data centers between 2022 and 2026, which Germany is not ready to provide at low cost.

In addition to labor shortages and energy costs, Germany's low growth can be linked to two additional factors.

DATA

0.1%

Germany's economy has grown by just 0.1 percent since 2019, compared with 4 percent for the euro area as a whole.

Legacy technologies

First, the country's legacy of leadership in the automotive, mechanical engineering, and chemical sectors has left it focused on, and reliant on, existing technologies. Existing infrastructure, specialized skills, and established markets in these traditional sectors have made it difficult for Germany's economy to diversify into high-tech sectors like IT and biotechnology. While private R&D spending remains relatively strong by international standards, it is concentrated in these "mid-tech" sectors, which can no longer deliver the desired growth.

Second, under the traditional German financial system, too much capital is allocated by the banking sector and too little flows to innovative and higher-risk businesses.

Deep and liquid capital markets foster long-term growth by channeling financial capital to the most productive and innovative companies. This is especially true for young and innovative firms such as start-ups. But German companies have traditionally relied on bank financing rather than the broader capital markets. Although the volume of venture capital grew from an average of 0.02 percent of GDP in 2011–13 to almost 0.09 percent in 2021–23, the volume is still insufficient, particularly for late-stage financing of growing companies. There are fewer and smaller venture capital funds in Europe than in the US or Asia, which makes it hard for start-ups to obtain funding through multiple large financing rounds.

One important reason is a lack of large institutional investors willing to invest in European venture capital. They either prefer to invest in less risky assets or they favor larger and established US funds. This poses a challenge, particularly for larger European scale-ups that frequently move to the US, where deeper capital markets and better exit options, especially as initial public offerings (IPOs), await.

What are the solutions to German stagnation? We think the country must address its economic development from two perspectives: It must look outside and drive European market integration, and it needs to look inside and foster long-term, future-oriented investment.

European integration

To ignite growth, Germany and the other European countries need large integrated markets, which allow businesses to scale up. No European country alone can be competitive with the large US market—nor the Chinese, for that matter. Hence, Germany

must actively push for greater European integration in goods, services, capital, and energy markets. Rather than reacting to changes in US economic policy, Germany and the European Union should focus on their existing strengths and actively pursue coordinated plans aimed at becoming economically stronger as an integrated single market.

While there are no formal barriers to trade in the single market, many nontrade barriers persist. These include complex or burdensome procedures for obtaining required permits and licenses to sell goods and services or the lack of tax harmonization. These barriers prevent German and other European companies from scaling up and making use of the potential opportunities that a single market with almost 500 million consumers offers. The EU Commission should make it a key priority to remove any barriers to trade in goods and services and coordinate the harmonization of national regulation.

The same holds for energy. A coordinated buildout of national electricity systems would reduce system costs and increase the efficiency of energy trading. Here, too, it is important to assume a European perspective rather than focusing exclusively on domestic needs. A European energy solution can be significantly more efficient and cost-effective, if all countries cooperate and coordinate.

To finance the substantial investments required for digitalization, defense, and the green transition, Germany must focus on building stronger and more integrated capital markets. A key step is for Germany to lead efforts to improve and harmonize national insolvency regimes, making it easier to value assets across EU borders.

In addition, the European Union should strengthen and reform the European Securities and Markets Authority. Increasing venture capital funding at the European level can be achieved by channeling resources to the European Investment Fund or the European Tech Champions Initiative. Moreover, German households need to learn about the advantages of investing directly in capital markets. A significant change in saving vehicles, away from savings accounts and toward broadly diversified stock market investment, would not only enhance returns but also encourage long-term investment.

Addressing labor shortages

Looking inside the country, it is evident that Germany needs to increase its domestic labor force significantly, both by improving workforce participation and by attracting foreign-born workers. Supplying high-quality and reliable childcare is crucial to increase the hours worked by mothers, as about one in two women now work part-time. Improving incentives for older people to continue working include restricting early retirement and linking the standard retirement age to longer life expectancy. Speeding up administrative immigration processes and extending the Western Balkans Regulation—which eases labor market access for those with a job offer—to additional countries could help attract more skilled foreign workers.

Germany has neglected future-oriented public investment for years, in particular in infrastructure, defense, and education. The incoming government recognizes those needs, and Parliament has passed a financial package creating a special fund for infrastructure and exempting defense spending above 1 percent of GDP from the "debt brake," Germany's constitutional limit on public borrowing. This change in fiscal rules is bold and brings much-needed funds to upgrade creaking infrastructure.

However, it does not address two major issues. First, the proposal does not address design flaws of the current debt brake. One is the lack of transition phases. After a crisis year, the debt brake is reinstated immediately the following year, which risks stifling a potential economic recovery. A more effective approach would allow for a gradual and orderly reduction of the structural deficit. Another flaw is that the existing rules do not account for the overall debt-to-GDP ratio; they apply the same constraints regardless of broader fiscal sustainability.

The second major issue is that the reform fails to tackle the existing political bias favoring short-term benefits for the current electorate over long-term gains for future generations. While the special fund is designated to cover only "additional" infrastructure investment, it is unclear how this will play out in practice. Moreover, redefining what constitutes defense spending may create short-term fiscal space by excluding it from the debt brake; this risks encouraging consumptive expenditure rather than structural reform. If Germany is committed to reaching the 2 percent North Atlantic Treaty Organization (NATO) defense spending target in the long term, defense spending should come from the core budget.

More broadly, any available fiscal space must be used strategically, prioritizing future-oriented investments that strengthen long-term competitiveness rather than masking deeper structural weaknesses. Otherwise, chronic stagnation is all but certain. F&D

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NATIONAL PERSPECTIVE: POLAND

EUROPE'S ECONOMIC REVIVAL

Andrzej Domański

COURTESY MINISTRY OF FINANCE, POLAND

Poland's successful economic transformation can inspire the continent today

Europe is experiencing a geopolitical awakening that will also reshape the continent's economic landscape. Can the European Union muster the will to change? Previous experience indicates that the answer is yes.

In testing times, we must look to our past for inspiration in the present. Poland provides one such inspirational story. Our living standards have leapt 3.6 times, from a per capita income of $13,100 in 1990 to $47,100 today in real terms. This year Poland is set to grow almost 4 percent, one of the fastest rates among the EU's largest economies.

Our geopolitical earthquake occurred in 1989, when communism fell and Poles regained freedom. However, the post-communist economy struggled against international competition. Large state-owned industrial plants were inefficient and per capita income was tragically low, while unemployment and inflation surged. The socioeconomic situation was dire.

Yet over the years Poland has made steady and impressive progress to become a high-income country. This success reflects well-implemented systemic and structural reforms, but above all the perseverance and hard work of our people. Since 1989, Polish GDP has grown by 220 percent in real terms. Unemployment has dropped from double-digit rates in the 1990s to less than 3 percent today, one of the lowest in the EU.

Foundations of success

Reform succeeded only because our people were capable and our society engaged and hungry for change. Poland has nurtured its talent through a strong education system that continues to grow. While maintaining effective primary and secondary schooling, Poland has expanded its higher-education sector, which now comprises over 350 universities and colleges.

Poland ranks 23rd in the World Bank's Human Capital Index, 24th in the Penn World Tables' human capital index, and achieves above-average performance in the Program for International Student Assessment—surpassing the EU average on all these measures. Education supplies the private sector with specialists and creates a new, competent workforce for public institutions.

Our transformation's defining symbol is accession to international organizations: the World Trade

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Students ask questions during a lecture at Jagiellonian University in Krakow, Poland.

Organization, the Organisation for Economic Co-operation and Development, and, most important, the North Atlantic Treaty Organization (NATO) and the European Union. Joining these institutions secured Poland's integration into the transatlantic community, attracting investment and facilitating technology transfer. EU membership, especially, has been a key driver of development, enabling Poland to close economic gaps by benefiting from the single market and cohesion policies.

Convergence machine

Poland's success has been driven by investment and export-led market expansion. Its strong position within the Western community has significantly boosted its attractiveness for foreign direct investment. Between 2004 and 2023, Poland attracted over $310 billion in foreign investment, almost half of the total of the eight states that joined the EU in 2004. Inward investment plays a dual role: bridging Poland's capital gap and facilitating technology transfer and job creation.

Poland's integration into the EU's convergence mechanism proves the theory of comparative advantage. Access to the single market has allowed our country to expand trade, specialize, and enhance economic efficiency significantly. Since joining the EU, Polish exports of goods and

> "Europe needs deregulation and economies of scale first and foremost."

services have increased nearly 3.5 times. Our technological sophistication has steadily improved. We have solidified our edge in middle-technology goods and built up a consistent surplus in service exports, driven partly by specialists employed by both newly established domestic companies and by multinational corporations. One of our leading economic think tanks, the Polish Economic Institute, estimates that European integration has boosted Poland's GDP by 40 percent compared with a hypothetical scenario in which we never joined the EU.

Education and specialization have also fueled Poland's digital leap. We have been early adopters of the latest technologies and network infrastructure, such as broadband internet. The financial sector, having developed information technology systems decades later than Western counterparts, has leapfrogged to modern solutions without legacy constraints. The Polish state is leading the way in digitalizing public services, offering digital IDs, automated tax filing, and various other governmental services online.

New challenges

As we close the income gap, Poland faces new challenges: the energy transition, capital market development, and advancing technological sophistication. We must also provide greater security as a result of Russia's invasion of Ukraine. This marks a fundamental shift from the past 30 years, when Poland's economic growth benefited from a peace dividend, in addition to its inner strength.

As the country becomes a regional powerhouse, Poland's role in the EU is also evolving as it transitions from being primarily a net recipient of EU funds to gradually taking on a greater financial role within the EU budget while actively contributing to the functioning of the single market through trade. We have surpassed China as an export market for German products; Polish industry also supplies goods to all Europe. Poland's challenges and those of the EU are increasingly aligned. Three of these merit special attention: ensuring that Europe's rigidities don't constrain economic growth; managing the energy transition wisely; and continuing to cooperate on security challenges, for which

Poland's defense spending—the largest in NATO relative to GDP—is critical.

Europe needs deregulation and economies of scale first and foremost. The single market has been a success—as evidenced by Poland's impressive export performance—but remains incomplete. The EU's biggest barriers are imposed by the EU itself. According to IMF estimates, nontariff barriers within the single market are equivalent to a 44 percent tariff on industrial goods and a staggering 110 percent on services. Without a real single market, European companies cannot scale up, and homegrown innovations remain confined within national borders. This potential must be tapped.

Furthermore, a properly executed energy transition is essential. Decarbonization is and will remain a priority. However, it is critical to address the disparity in energy prices versus the US and China. European industry faces electricity and gas prices up to three times higher than those of our main trading partners. The energy transition is both an environmental necessity and an economic opportunity, considering both the indirect benefits of reduced pollution and the competitive advantage from the clean-industry value chain.

Above all, Europe is regaining confidence in the European project. European integration in the era of Adenauer, Schuman, and De Gasperi was a world-changing endeavor. It marked an epochal shift, made possible by visionary leaders who transcended the constraints of their times and short-term interests. Yet lately hesitation and fragmentation have slowed integration efforts. Parochial interests still stall some initiatives to deepen integration. Research on cutting-edge technologies on the scale of those of the National Aeronautics and Space Administration and the Defense Advanced Research Projects Agency in the US is hampered by concerns about joint funding. Regulatory inconsistencies between countries continue to pose challenges for the private sector.

The tide is turning, however. Following its geopolitical awakening, Europe recognizes the need for a new wave of economic integration, and with it, smart regulation and simplified laws to reignite the spirit of prosperity that has always defined the European way of life. I am optimistic. A competitive and secure EU is not just possible, it's within reach. And the way my fellow Poles adapted to geopolitical changes 35 years ago should inspire us all. Major positive change is possible even during times of global turbulence. EU governments are preparing Europe's economic revival. F&D

ANDRZEJ DOMAŃSKI *is finance minister of Poland.*

NATIONAL PERSPECTIVE: GREECE

REMARKABLE RECOVERY

Konstantinos Hatzidakis

Once regarded as Europe's economic Achilles' heel, Greece is now emerging as an unlikely success story. This remarkable turnaround is underpinned by positive growth rates outpacing the European Union average, a significant rebound in investment, historically high exports, and a decline in unemployment to levels unseen in over a decade. Fiscal policy remains consistent, delivering increasing primary surpluses, and public debt has decreased almost 55 percentage points of GDP, one of the steepest declines Europe has ever seen.

Strong reforms have turned Greece into one of Europe's fastest-growing economies

Beyond fiscal and macroeconomic indicators, the transformation also carries a qualitative dimension: a business climate increasingly favorable to investors, improved financing conditions, a state that is proving more adept at economic management, and, of course, the restoration of Greece's investment credit rating.

This strong economic performance did not occur in a vacuum. It is the result of implementing the right policy mix: a prudent fiscal policy to restore market confidence, a sustained effort to heal our banking system, and the completion of growth-enhancing structural reforms.

THIS PAGE: IMF PHOTO/JAMES MERTZ, OPPOSTIE: MATTHEW LLOYD/BLOOMBERG VIA GETTY IMAGES

Pedestrians pass the headquarters of the Bank of Greece in Athens.

Competitive frameworks

On the fiscal front, we have improved our performance consistently since the pandemic, with the primary surplus reaching 4.8 percent of GDP in 2024, leading to an overall budget surplus of 1.3 percent in that year. Crucially, this was not achieved through draconian austerity, but through economic growth and, most important, a determined effort to tackle tax evasion, which we estimate increased revenues by almost 3 percent last year.

Turning to the banking sector, we have successfully cleaned up balance sheets and curbed nonperforming loans. This major milestone has enabled Greek lenders to fully regain their essential role in financing the real economy. At the same time, deposits have increased steadily, and strong profitability has further strengthened capital adequacy ratios. The successful sale by the Hellenic Financial Stability Fund of its holdings in local banks, which attracted significant interest from reputable long-term foreign investors, is a tangible vote of confidence in the Greek banking system.

With regard to structural reforms, we have reduced taxes and social security contributions, thus easing the burden on businesses and consumers alike. We cut red tape by simplifying licensing procedures and modernized labor legislation, aligning it with the evolving needs of businesses and employees. We established one of the most competitive incentive frameworks for research and innovation—including amortizations of up to 315 percent for R&D expenses. Privatizations have proceeded at record pace, generating public revenue and, most important, unlocking new opportunities for investment and job creation.

We introduced a state-of-the-art insolvency framework—classified by the Organisation for Economic Co-operation and Development as meeting best international practice—which is helping to rid the private sector of problem debt, as evidenced by a decline in the stock of private debt in absolute terms and relative to GDP. The restructuring of the GrowthFund, which manages public assets, represents another step toward more efficient resource use. Reforms have taken place across the board, including in digitalization, justice, education, upskilling and reskilling, the pension system, and transparency standards.

Of course, we still have a way to go. We do not downplay the challenges. Greece's debt-to-GDP ratio remains high, albeit with a favorable structure and interest rate provisions, mitigating risks. Inflation, while declining, remains sticky, particularly in the services sector. Investment is improving, but still lags the EU average, underscoring the need for further capital mobilization. Productivity, though rising, remains below the EU average. The same holds true for labor market participation, particularly among women. And of course, we must strengthen the resilience and adaptability of our economy against external challenges, including the green and digital transitions and increasing global economic fragmentation.

Future agenda

Our aim is to ensure that the hard-earned progress of recent years is not compromised. This is why we remain firmly committed to fiscal prudence. Over the next few years, we anticipate maintaining pri-

"We have cleaned up bank balance sheets and curbed nonperforming loans. This major milestone has enabled lenders to regain their essential role in financing the real economy."

mary surpluses close to 2.5 percent of GDP, and the debt-to-GDP ratio is projected to decline by an additional 20 percentage points by 2028. Are these forecasts overly optimistic? If past performance is any indication, quite the contrary.

In recent years, Greece's economy has consistently outperformed expectations, often by a significant margin. Furthermore, these projections do not yet factor in the strategic use of our substantial cash buffers for early debt repayments—a key pillar of our highly effective debt management strategy.

Strengthening tax compliance will remain a priority. To the extent that fiscal space becomes available through higher public revenues, the government aims to implement growth-friendly tax reductions for labor and businesses, boosting disposable incomes and enhancing competitiveness.

We are also determined to step up our efforts to transform the Greek economy into a model of fast, sustainable, and inclusive growth. To achieve this, we will continue transformational reforms focusing on the real side of the economy, including simplifying business regulation and improving the state's administrative capacity. We intend to remove remaining market entry barriers, particularly in the services sector, to foster competition, improve efficiency, and enhance business dynamism.

Delivery of justice

Another priority is to enhance legal certainty for investors. Speeding up the delivery of justice is key, and we have major initiatives underway, including comprehensive legal reforms and expanding the use of advanced technologies. The full implementation of the National Cadastre and the completion of local and regional urban plans, which will clearly and transparently delineate land uses, will also foster a more predictable and efficient investment environment.

We will continue strengthening competition in the banking system to ensure that businesses and consumers benefit from better financial services, lower costs, and increased access to credit. But equally important is the expansion of financing options beyond traditional bank lending—particularly for innovative small and medium enterprises. That is why we are implementing a comprehensive strategy to strengthen the Greek capital market and foster venture capital and private equity activity. Optimizing the use of EU funds will also be the key to unlocking new investment.

Last but not least, we remain committed to strengthening both our physical infrastructure and human capital. Planned investments in renewable energy and electricity grids will help reduce energy costs, allowing businesses to operate more competitively. At the same time, upskilling initiatives will ensure that the workforce is equipped for the demands of a rapidly evolving economy.

Greece has staged a remarkable economic recovery over the past five years. The potential for further improvement is still substantial. Given the economy's present state and its strong momentum, we expect growth to continue outperforming the European average for the foreseeable future. At the same time, Greece enjoys access to the large, high-income European single market, as well as low economic and institutional uncertainty. This advantage is compounded by the country's strong political stability and its clear geopolitical orientation.

This set of attributes, combined with our commitment to an ambitious reform agenda, makes Greece an increasingly attractive option for investment that will benefit our citizens' living standards and welfare. F&D

KONSTANTINOS HATZIDAKIS *is vice president of the government of Greece and a former minister of economy and finance.*

NATIONAL PERSPECTIVE: SPAIN

OUR SHIFT TO SUCCESS

Carlos Cuerpo

COURTESY MINISTRY OF ECONOMY AND FINANCE, SPAIN

For the first time in its modern history, Spain's economy has come out of an international crisis stronger than it went into it. It's a testament to the profound positive shift underway in continental Europe's fourth-largest economy.

While most of the continent is still reeling from the fallout of the pandemic and subsequent price shocks stoked by Russia's invasion of Ukraine, Spain has emerged from both shocks with a strong and balanced growth performance and without permanent scars. The shock from COVID-19 led to an 11 percent drop in economic output in 2020, but our policy response was different this time around.

We learned from past lessons and did not resort to the belt-tightening measures that increased unemployment and reduced income during the 2008 financial crisis. Instead, we put in place a social safety net, with furlough programs that supported nearly 3.4 million workers at their peak, and public credit lines that bridged the liquidity needs of over 674,000 mostly small- and medium-sized firms.

This hands-on strategy, coupled with European Union recovery funds to bolster investments, and productivity-enhancing reforms, has made the Spanish economy more competitive and inclusive.

Spain's new model of balanced and sustainable growth is overcoming traditional dilemmas

Spain was the world's fastest-growing major developed economy in 2024, contributing about half of the overall growth in the euro area while representing only a tenth of its GDP. Our economy is well placed to be at the top again this year, despite the specter of a global trade war and rising geopolitical tensions, and was the only major advanced economy to have its 2025 growth projection revised up by the IMF in its latest outlook, in April.

The key to Spain's transformation is a balanced economic model that capitalizes on our strengths and has spurred record job creation alongside higher productivity and our largest-ever current account surplus. We are one of the world's greenest economies and have become a hub for foreign investment. We have reduced income inequality without putting our public finances at risk.

Dynamic labor market

The robust labor market performance came thanks to a sweeping reform in 2021 that broadened permanent hire options. We are creating record numbers of jobs despite a slowdown in the euro area, with our economy generating more new employment than France and Germany combined last year.

Many of the new jobs have been taken up by immigrants, mostly from Latin America—two-thirds of new workers in 2019–24 were foreign-born. This has helped ease acute labor shortages and finance our social security as the economically active population ages and the birth rate declines.

These are high-quality and more stable jobs. Over the past two years, job creation in high-value sectors such as information and communications technology has expanded at twice the pace of overall employment. Temporary employment, once a chronic feature of the Spanish economy, has dropped sharply to converge with the EU average.

This process has gone hand in hand with increased awareness of the importance of social inclusion. Repeated increases in the minimum wage, by a total of 61 percent since 2018, among other measures, mean that Spain has the lowest wage inequality among developed economies, according to the International Labour Organization.

Along with other policies, such as a "minimum vital income," this is contributing to greater economic equity: Spaniards are recovering their purchasing power at a faster pace than their euro area peers, according to the Organisation for Economic Co-operation and Development.

External resilience

Another important change in our model is the improved performance of the external sector. Unlike during past expansion cycles, Spain is not overreliant on foreign capital to finance growth, which reduces the risk of dangerous financial bubbles, as occurred during the real estate crisis over a decade ago. On the contrary, we recorded our highest-ever balance of payments surplus last year, equivalent to 4.2 percent of GDP.

Spain welcomed a record 84 million visitors last year, and our increasingly diversified tourism sector remains an important driver of growth. However, it was overtaken recently by non-tourism exports, including financial services, IT, and professional consulting, which generated more than €100 billion last year. Growth in these higher-value, higher-skill services highlights the modernization of our economy.

"Spaniards are recovering their purchasing power at a faster pace than their euro area peers."

The growing competitiveness of our companies and highly skilled labor force have turned Spain into one of the world's top investment destinations. Between 2018 and 2024, Spain was the world's fifth-largest recipient of greenfield projects, those that most increase productive capacity and employment, according to the *Financial Times* investment tracker.

A key factor behind our competitive edge was our early bet on green energy. After decades of

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heavy public and private investment, we have increased our share of electricity generated by renewable sources from just over 20 percent in 2019 to 56 percent last year. According to our central bank, this change in the energy mix was responsible for lowering electricity prices by 40 percent, increasing our competitiveness, strategic autonomy, and energy independence.

Fiscal sweet spot

Our balanced model is underpinned by a strong commitment to fiscal responsibility, which has led to a steep reduction in our public debt and deficit. Our debt-to-GDP ratio has dropped by more than 22 percentage points from its peak during the worst of the pandemic in 2021, inching closer to 100 percent. Our budget deficit is down by 7 percentage points and has fallen below the EU's official threshold of 3 percent for the first time in six years. That discipline has reinforced market confidence, as reflected in record demand for our sovereign bonds, contained credit costs, and a string of credit rating upgrades.

People enjoy time together at a café in Seville, Spain.

More important, fiscal responsibility has been compatible with the protection of our welfare state, which is critical for social acceptance of our reforms. Indeed, Nobel laureates Daron Acemoglu, Simon Johnson, and James Robinson stress the importance of institutions' social purpose when explaining differences in economic development. Ultimately, Spain has managed to find the sweet spot that balances strong growth and social progress with sustainable public finances.

This growth model would not have been possible without the great precedent set by the post-pandemic recovery plan, which has accompanied Spain's investment and reform drive, helping to modernize and decarbonize our economy. The recovery funds for investment and reform are already bolstering growth and employment and are expected to add 3.4 percent to GDP by 2031, compared with a no-plan counterfactual scenario. Stronger growth is helping spread wealth and reduce inequalities.

Spain has already invested almost €50 billion in the green and digital transitions, and has implemented critical reforms to reduce red tape, enhance the business environment, improve digitalization and innovation, promote the green transition, and reinforce social protection.

We have more to do, of course, to turn these strong macroeconomic results into tangible improvements to people's lives. This includes continuing to reduce unemployment, improving training opportunities and aligning them with business needs, lowering inequalities, and promoting equitable opportunities for all.

One of the government's top policy priorities is to solve the housing challenge to ensure that our citizens, especially young people, have access to affordable homes—a critical building block for people's personal and professional decisions.

Spain's new model of balanced and sustainable growth is about challenging traditional dilemmas and reconciling efficiency and competitiveness with environmental sustainability, social inclusion, and fiscal responsibility. Striking this balance is the result of better policy choices that have led to a structural shift in our economy, making it more resilient for the long run. F&D

CARLOS CUERPO *is Spain's minister of economy, trade, and business.*

EUROPE'S ELUSIVE SAVINGS AND INVESTMENT UNION

Ravi Balakrishnan and Mahmood Pradhan

An integrated capital market must be accompanied by regulatory reforms to attract substantial investment

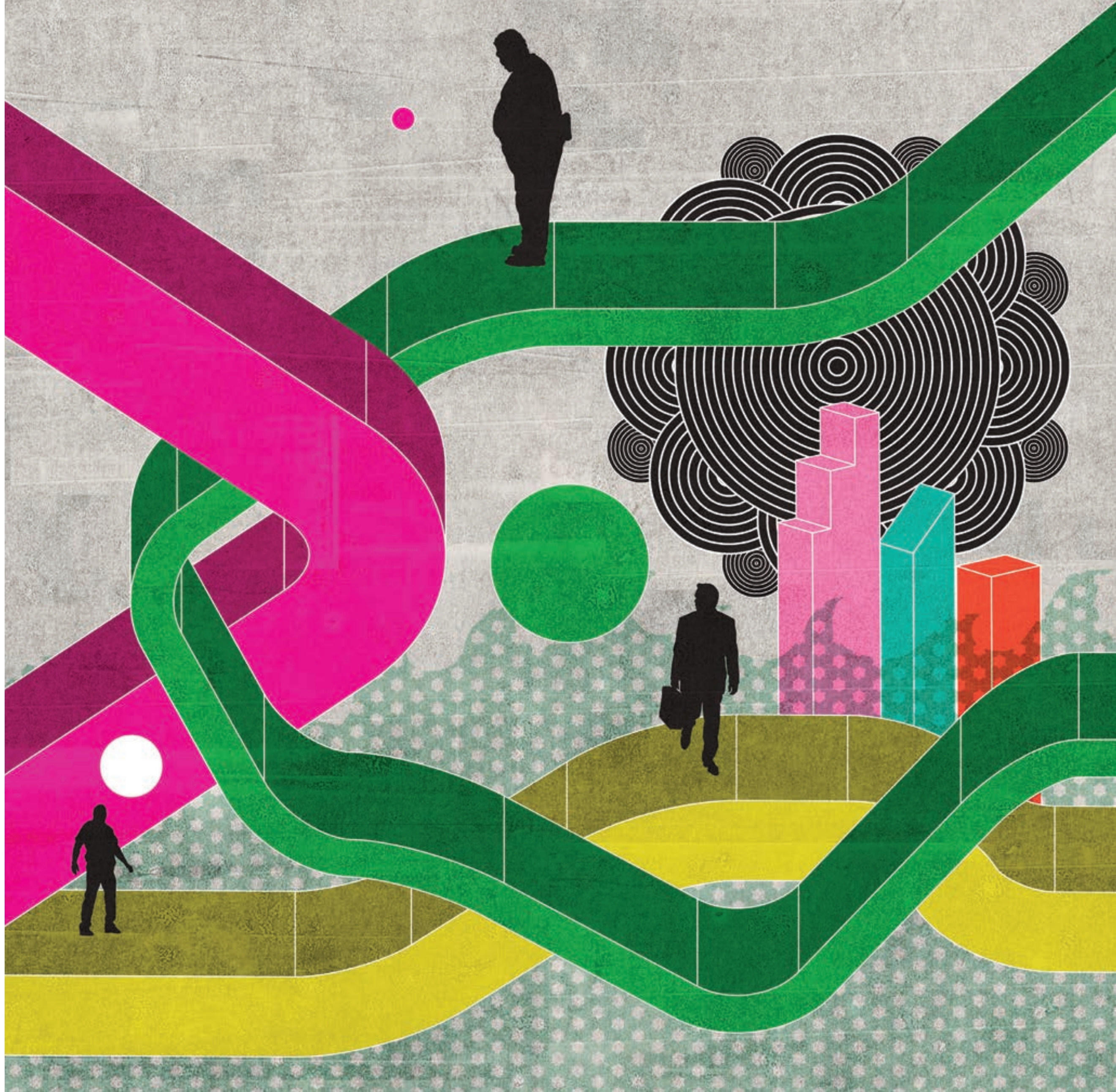
Europe has ample savings but not enough investment. A savings and investment union (SIU)—a pan-European financial market that mobilizes and makes savings available for investment across the European Union—is part of a long-term remedy.

But it will take more than that to generate the amount of investment the EU needs to meet its growth and geopolitical challenges. A single financial market must be able to offer attractive investment returns. That requires less red tape and uniform regulation across EU states, which will lower trade barriers between them.

The push for a continent-wide capital market is not new. An earlier initiative, launched in 2015 as the EU Capital Markets Union, turned out to be politically contentious. Now, the idea has renewed impetus following reports in 2024 by former European Central Bank President Mario Draghi and former Italian Prime Minister Enrico Letta and the European Commission's March 2025 publication of its SIU strategy.

An integrated financial market would complement the single market in goods and reduce the dominance of bank financing in favor of more long-term capital market financing for investment, as in the United States. The various proposals (and the Commission's latest communication, which builds on them) comprise tackling a long list of specific barriers to a unified market. These proposals command much support among technocrats and markets, but with little progress to show so far. This is amply illustrated by one of the key obstacles to an SIU: The EU banking union, launched after the 2008 global financial crisis, remains incomplete.

A larger pool of savings available across the EU is



necessary to increase private investment. As the Draghi report notes, about 80 percent of productive investment has historically come from the private sector. And this private contribution is even more pertinent now given the tight fiscal constraints in the largest countries (with the exception of Germany).

Fragmented capital market

Savings in Europe are kept largely in domestic economies, partly because 80 percent are in bank deposits. And banks do not normally lend these deposits across national borders. This pervasive "home bias" of savings and investment (more than in the US) is compounded by regulatory barriers that inhibit greater cross-border financial activity and capital market development.

Europe's low issuance of securitized assets is a prime example of how the lack of uniform regulation and unnecessarily high capital charges inhibit growth. The underlying assets in any European securitized offering are national and comprise largely residential mortgages. Differences in national regulations make it difficult for issuers to package EU-wide mortgages in one security.

Institutional holders such as pension funds and insurance companies also limit their holdings because of high capital charges imposed by the regulator, the European Insurance and Occupational Pensions Authority. The net effect is low issuance, and assets that could easily be sold into capital markets remain instead on bank balance sheets. Regulatory differences, moreover, exacerbate home bias among institutional investors. Similarly, pensions are not portable across the EU when people take jobs in another member state, confining investment within national schemes.

Fragmentation has real costs. It results in sub-

JOHN HERSEY

stantial variation in borrowing costs for households and especially small and medium-sized businesses. This variability across national boundaries results partly from the relationship between bank funding costs and the funding cost of the sovereign government (because bank resolution is still largely national). But it also stems from the lack of competition in European banking.

The variability in lending margins declined following the European Central Bank's large-scale targeted liquidity provision, but it is still higher than it was before the global financial crisis, even though the divergence in government bond yields has subsided. More uniform bank funding is particularly important for small and medium enterprises because many would not meet the requirements for market funding, and many might not want to give up control.

This points to the central role for banks in an SIU. Large banks in the US have more than 60 million customer accounts each—no European bank comes close—and therefore benefit not only from economies of scale but also important synergies from marketing many different products. With bank resolution still the responsibility (and under the purview) of EU member states, banks' activities remain largely national, with limited cross-border flows of bank liquidity. This limits the growth of both pan-European savings products and investment instruments that span national borders—such as, for example, mortgages and securitized loans.

As in the US, banks are essential for capital market development, something the European Commission's SIU strategy underscores. Banks issue securities, act as intermediaries for investors, and are investors and liquidity providers themselves. Thus, the unfinished banking union is unquestionably holding back progress toward a pan-European capital market. Even if common resolution is difficult, allowing more cross-border mergers and letting banks move liquidity where they deem returns to be reasonable would be a good start.

Equity capital is also more expensive than in the US. This reflects, among other things, a much larger US market, compared with Europe's fragmented, and still largely national, market. Moreover, the EU's bank-based system is not well suited to providing innovators sufficient capital to start up and then scale up. The value of start-ups that develop new technologies and business models is often in intangible capital, which banks typically do not finance because of insufficient collateral. This points to a need for venture capital.

But according to IMF calculations, venture capital funds raise seven times more in the US than in the EU, reflecting EU private capital pools being smaller and more fragmented than in the US. As a result, the EU currently is home to less than 15 percent of start-ups valued at more than $1 billion (so-called unicorns). According to the European Investment Bank (EIB), EU scale-up firms raise 50 percent less capital on average than their US counterparts in their first 10 years. Stock market fragmentation also makes growing through initial public offerings (IPOs) in the EU less attractive than in the US, further reducing incentives to invest in EU start-ups. Many are therefore motivated to move abroad to get financing to scale up.

Harmonized regulation

The early designs for what was then planned as the EU Capital Markets Union included more ambitious initiatives: a common insolvency framework across all member states and, the most politically contentious, an EU-issued safe asset, such as its own bond. Many consider such an asset essential for pricing and hedging private risk. Except for one or two bigger members with large debt markets, member states could not provide a safe asset with predictable credit quality. As yet, these ideas remain on the drawing board.

The early plans also included centralizing regulation, with the European Securities and Market Authority (ESMA) acting as the single common regulator for EU financial markets, and setting common reporting requirements for issuers. Progress in this area has been slow, with national regulators required to cede more power to ESMA only gradually. A renewed push in this area following the Commission's communications and other reports is encouraging, although the differences of opinion among member states haven't disappeared.

Expected returns drive investment

There is also too much optimism about the SIU being the fix for low investment. It is doubtful that an integrated financial market alone could increase investment anywhere close to 5 percent of GDP per year—the shortfall identified by Draghi. The availability of capital, or the dispersion in the cost of capital across the EU, is a drawback. But it is difficult to believe this is the main impediment to investment. For example, spreads on large firms' borrowing are not significantly higher in the EU than in the US (see Chart 1).

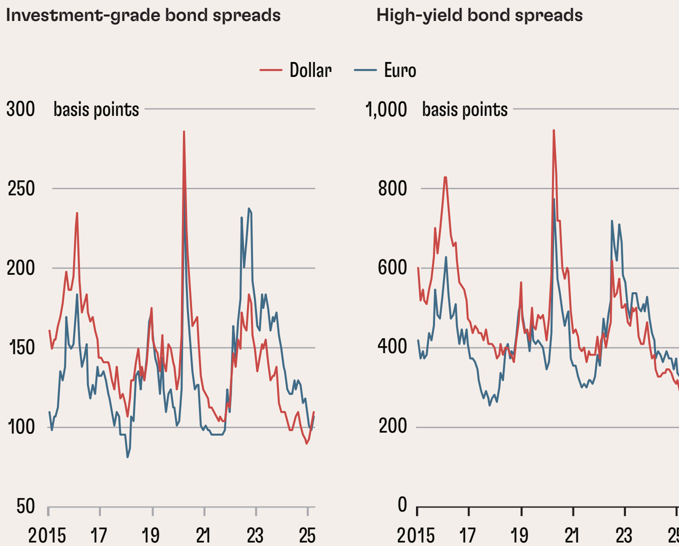
A bigger pool of savings and lower cost of capital are only one side of the equation. Firms will invest more if they expect higher returns, which in turn requires reforms and deregulation that expand their market.

Lack of uniform regulation in the EU single market is an underlying issue that prevents companies

CHART 1

Corporate spreads compared

Borrowing spreads on corporate euro area bonds are not significantly higher than in the US.



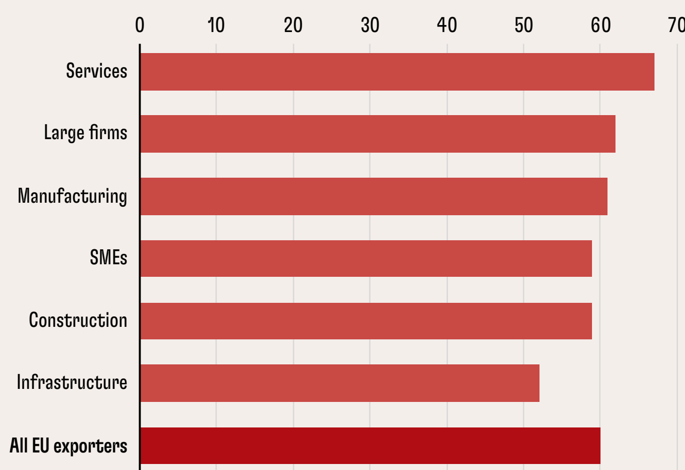
SOURCE: S&P Global.

CHART 2

Regulatory variability

Different regulations across EU countries are a concern for many businesses, especially in services.

(percent of firms reporting significant differences in regulation)



SOURCE: European Investment Bank. EIB Investment Survey 2024, European Union Overview.
NOTE: SMEs = small and medium enterprises.

from scaling up by expanding into other EU markets. This is likely a more important factor behind the persistent growth divergence between the US and the EU, which manifests itself in lower rates of return on EU investments.

According to EIB surveys, 60 percent of EU exporters and 74 percent of innovators report that they must comply with significantly different regulations across EU countries, with the services sector hit hardest (Chart 2). This reduces intra-EU trade, with IMF estimates suggesting that remaining intra-EU trade barriers are equivalent to an ad valorem tax of 45 percent for the manufacturing sector and up to 110 percent for the services sector, well above levels in US states.

Beyond the costs of intra-EU trade barriers, EU firms face significant costs associated with red tape. According to EIB estimates, the cost of dealing with regulatory compliance is 1.8 percent of sales on average (2.5 percent for small and medium enterprises). By comparison, EU firms' energy costs have been about 4 percent of sales. The cost of red tape is behind the current EU aim to reduce the reporting burden for all companies by 25 percent and by 35 percent for small and medium enterprises.

Not a panacea

A single financial market would increase cross-border financial flows and reduce the cost of capital. But the limited progress so far points to high political and legislative hurdles. In the many constructive proposals put out recently—largely recycling ideas that have been around for almost 10 years—most of the actions needed are at the member-state level, where there is still much lingering disagreement, such as on completing the banking union and on harmonizing withholding taxes and insolvency regimes.

Even with quick progress on an SIU—a huge ask—it is unlikely to generate enough investment for the EU to meet its growth and geopolitical challenges. In particular, gross rates of return will need to be higher. Moving on the competitiveness and single market agendas quickly is key.

The EU must act on various fronts simultaneously to create a positive feedback loop of lower trade barriers and less red tape, higher rates of return, more unified financial regulation and supervision, and fewer impediments to the cross-border movement of capital. It is a formidable task. But one the EU must overcome to counter increasing growth headwinds. F&D

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EUROPE'S INNOVATORS ARE WAKING UP

Alessandro Merli

The continent's innovation success stories and renewed sense of purpose defy criticism of overregulation

"The US innovates, China replicates, Europe regulates" is how critics summarize the continent's approach to innovation. Exhibit A of the European Union's regulatory overreach is the now infamous Artificial Intelligence Act, which governs AI—even though the region has not yet produced a single major player.

Productivity in US technology firms has surged nearly 40 percent since 2005 while stagnating among European companies, according to IMF research. US research and development spending as a share of sales is more than double what it is in Europe. No European company ranks among the 10 largest tech companies by market share. The first European on the list, SAP (14th), a German software company, is worth only 10 percent of number 1 Apple. Dutch semiconductor supplier ASML (15th) has about 10 percent of the market value of Nvidia (2nd), as ranked by CompaniesMarketCap.

Illustration by John Hersey

Yet reality, as usual, is more nuanced. Europe's innovation scene holds life in various shapes and sizes. Many European tech companies are now global household names: Spotify and the buy now, pay later fintech Klarna, from Sweden, and the British digital bank Revolut. Skype, which owner Microsoft recently retired, was founded in London by four Estonians, a Dane, and a Swede. One of its first employees, Estonian Taavet Hinrikus, cofounded Wise, a money transfer company.

Health prowess

There's some truth to Europe's reputation for overregulation, says Francesca Pasinelli, the former managing director of Italy's Fondazione Telethon, which raises money for health research. "But it is not the whole story." European companies are more prominent in the pharmaceutical sector. Denmark's Novo Nordisk, maker of the popular weight-loss drugs Ozempic and Wegovy, is the fourth largest by market capitalization in the pharma ranking, which also features the UK's AstraZeneca and Switzerland's Roche and Novartis. The small German company BioNTech, founded in 2008 by two immunologists of Turkish descent, shot to planetary fame when the COVID-19 vaccine they developed with US pharma giant Pfizer came first to fruition, in record time.

Fondazione Telethon was started in the 1990s by families of patients with rare genetic conditions to raise funds and promote research "in areas where neither the public nor the private sector would step in, because of the small number of people involved," says Pasinelli, who became managing director in 2009 and is now a board member.

Since its inception, Fondazione Telethon has invested almost €700 million in over 3,000 projects. Famous in Italy for its annual TV fundraising marathon (hence the name), which features showbiz and sports personalities, the foundation does its own evaluation, allocation, and monitoring of funds. "We copied the rigor of the NIH model," says Pasinelli, referring to the US National Institutes of Health.

Venture capital gap

Even so, the gap between the US and Europe remains enormous. The most cited cause is a lack of financing for innovation because of the absence of a capital market union and insufficient venture capital. In 2024, US venture capitalists invested €210 billion in over 15,000 deals, versus €57 billion and fewer than 10,000 deals in Europe, according to Italian Tech Alliance. Europe, which trails Asia as well, risks falling farther behind. Its two largest markets, the UK and France, shrank last year—the value of investment dropped from €19 billion to €16.8 billion and from €9 billion to €7.7 billion, respectively. The number of deals also decreased. The third-largest market, Germany, rebounded slightly to €7.4 billion from €7.1 billion.

"Innovators, venture capitalists, and academics agree that things in Europe are moving."

Lack of capital doesn't explain everything. "Capital is mobile and therefore available where there are good opportunities," says Maurizio Sobrero, professor of innovation management at the University of Bologna. "In many cases, the real obstacle is the fragmentation of the European market because of different national rules and authorization regimes. This is quite evident in some sectors, for instance biomedical equipment." IMF research also points to market fragmentation. Many nontrade barriers remain within the single market, which prevents innovative companies from scaling up and undertaking investment that will pay off only if there is a larger customer base.

Sobrero and his coauthors looked into research financed by European Research Council grants. Of the top 20 firms by number of patent applications that cited Council funding, more than half were US firms, indicating that they are more adept at turning research into technology with economic impact.

Some see value in smaller-scale venture capital. "The big US firms will not get involved in small deals," says Elizabeth Robinson. She holds a PhD in biotechnology from the Massachusetts Institute of Technology (MIT) and cofounded Nicox in the 1990s, with research originally done in Italy and funded by French and Swedish venture capital firms. The company started with gastric therapy and moved to ophthalmology. "It was a real European endeavor," she told F&D.

Robinson is now vice-chair of Indaco Venture Partners, which counts the European Investment Fund among its investors and focuses on five areas of innovation, including medical technology and biotech. She thinks that Europe has a chance to take advantage of the announced funding cuts to NIH.

Mentality change

Once, when asked about Europe's approach to start-ups, Spotify founder Daniel Ek responded with a playlist that started with "Wake up," from the US band Rage Against the Machine: "Who I got to do to wake you up? To shake you up, to break the structure up."

There are encouraging signs that Europe is finally waking up. A report on the future of European competitiveness by Mario Draghi, a former Italian prime minister, mentions accelerating innovation as the first transformation needed to launch the European economy into the future. He called for additional €800 billion spending yearly on green, digital, and defense investments.

Europe is showing the will to invest more in AI as well. An AI action summit convened by French President Emmanuel Macron in February 2025 brought a promise of €109 billion from France itself and a commitment from the European Commission president, Ursula von der Leyen, to mobilize EU and private funds to reach a total of €200 billion. But this is far short, for instance, of the US commitment of $500 billion for the Stargate Project, led by OpenAI and others.

The growing involvement of the European Investment Bank (EIB) and the European Investment Fund (EIF) is a sign that things are moving in the right direction. In 2024, the EIB invested a record €19.8 billion in high-risk digital and innovation companies, according to its annual report. Of that sum, €14.4 billion came from the EIF, half of it in the form of equity. The EIB has also doubled its capital investment in security and defense tech companies. This, together with a massive increase in defense spending announced by Germany and other countries, should be a boon for European defense tech companies and boost research and development spending.

Among countries, Spain is one of the most active, helped by public institutions. It approved a start-up law at the end of 2023, and investment leapt 16 percent to €2 billion. The law gives tax incentives to companies, investors, and employees; claims to be the most favorable in Europe on stock options; reduces red tape; and introduces new public funding streams, one to support women entrepreneurs. Spain's private sector followed up with about €3 billion of its own funds.

AI and shoes

Universities are a natural breeding ground for innovation. Although Europe lacks behemoths like MIT and Stanford, many universities now have flourishing ecosystems and have spawned several unicorns, start-ups valued at more than $1 billion. The University of Cambridge tops a ranking for the number of "spinouts" and plans to accelerate development in tech and life sciences in the next 10 years. One of its oldest and most successful examples is ARM, which produces semiconductors and software used in smartphones, founded in 1990.

Next in the ranking is ETH Zurich, birthplace of the trademarked hollow pods that grace the soles of the Swiss footwear brand "On." Other academic institutions prominent in innovation are the Technical University of Munich in Germany, the Delft University of Technology in The Netherlands, and Aalto University in Finland.

The relationship between European universities and innovators is still evolving. Like their American counterparts, many often take an equity stake in the early stages of innovative companies. According to Robinson, of Indaco, however, some universities later resist dilution of their stake and don't join subsequent financing rounds, which can delay companies' scale-up.

And there is more good news. Three graduates of the University of Coimbra, in Portugal, who met while working at the European Space Agency, created Feedzai, a platform to fight financial fraud through the use of AI and biometrics. It is now used by several global financial institutions to monitor $6 trillion in payments every year.

Although financed by US venture capitalists and now with offices in Silicon Valley, the company maintains its headquarters in Coimbra, whose university dates to the 13th century. "There is value in staying here because we want to continue contributing to the development of the ecosystem," Nuno Sebastião, one of the founders, told Portuguese newspaper *Público*. One initiative spearheaded by Feedzai has already led to the launch of 12 start-ups and raised $412 million in funding.

Innovators, venture capitalists, and academics agree that things in Europe are moving. "For the first time, the EU Commission has a commissioner dedicated only to start-ups, research, and innovation," notes Francesco Cerruti, director general of Italian Tech Alliance. "But there is a need for translating words into action. And fast." F&D

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The Longevity Dividend

Andrew Scott and Peter Piot

AGING POPULATIONS SHOULD BE EMBRACED, NOT FEARED

The story of demographic doom has become familiar: Declining birth rates will cause populations to shrink, while longer lifespans will increase the costs of pensions and eldercare. Relatively fewer workers will have to pay for it all.

This story is partly true: One in ten people worldwide are now over 65, and that proportion is projected to double over the next 50 years (see Chart 1). Population decline has already begun in places such as Japan and China. Those countries are also experiencing a sharp increase in median age, as is Europe.

But the pessimism around an aging population is too one-sided. In fact, the combination of older people becoming more numerous and more likely to work makes them essential to economic dynamism.

In Europe, 90 percent of the increase in workers in the past decade—17 million more people in employment—came from a jump in workers over 50, according to the Organisation for Economic Co-operation and Development. In Japan, the proportion is even higher. In both places, older workers are already the main driver of GDP growth.

This is just one component of the "longevity dividend" societies can reap if we rethink our approach to aging (Scott 2024). It starts with reframing the policy debate in two fundamental ways.

The first is to stop seeing an aging society only as a problem. This is a strikingly negative way of framing one of the greatest achievements of the 20th century: Most of humanity is living longer, healthier lives. That's an opportunity.

The second is to drop the unworkable focus on changing individual behavior in order to preserve current systems. Instead, focus on helping each person adapt to greater life expectancy—give them the support needed to live their best longer life.

This perspective points us to a new approach to aging based on redesigning health systems and investing more in our later-life human capital to seize the opportunities of an older, more experienced population.

Adapting to longevity

In the 20th century, more people living from 40 to 60 meant more years when people tended to be

Illustration by Hadley Hooper

employed and in reasonably good health. In this century, life expectancy gains mean more people living from 60 to 90. If people's behavior doesn't change and systems are still based on the life expectancy of the previous century, pension and health costs will rise and be a drag on economies, especially those of richer countries.

For individuals, longer life causes a profound change in outlook. When there is only a small chance of living long enough to become old, investing to benefit your future octogenarian self doesn't make sense. But with global life expectancy now exceeding 70, and even 80 in an increasing number of countries, it does.

This logic has radical implications for our health, education, work, and financial systems—areas where traditional approaches are no longer working.

Raising the state retirement age generates widespread resistance. Policies aimed at raising birth rates are expensive and have relatively modest effects because they go against individual preferences. Immigration holds political challenges.

What's more, the latter two sets of policies target changing the relative size of different age groups but do not address the deeper challenge of how we adjust to longer lives. If longevity is what makes our pensions and health systems unsustainable, higher birth rates or immigration merely delay the financial day of reckoning.

Investing in the human and social capital of our later years is the only sustainable solution to the challenges of an aging society.

Expansion of morbidity

Gains in life expectancy over the previous century drove an epidemiological transition, with the health burden shifting from infectious to chronic noncommunicable diseases (Omran 1971). The latter now account for 60 percent of the disease burden globally, and 81 percent in the European Union.

Because of this shift in the disease burden, healthy life expectancy has not grown as fast as overall life expectancy, causing an expansion of morbidity. The current health system is at risk of keeping us alive but not healthier for longer, at an ever-increasing cost to individuals, families, and society.

In short, in the 20th century, we added years to life. In the 21st, we must add life to these extra years.

This requires a shift toward chronic disease prevention and health maintenance, not just treating people when they become ill. Three factors make the switch to prevention more feasible and desirable.

First, increased longevity means that most people can expect to experience chronic disease.

Second, the growing availability of structural risk and genetic data makes targeted interventions possible. Given the significant role of socioeconomic factors in driving health, this points to a clear link between reducing poverty and improving a country's health as well.

Third, advances in biology hold the prospect of more effective forms of prevention. The dramatic impact of GLP-1 drugs such as Ozempic and Wegovy shows how a single class of therapeutics can help postpone the incidence of multiple diseases. Likewise, developments in the biology of aging hold the potential for future drugs that tackle aging-related diseases directly.

Increased investment in life sciences and biopharmaceuticals should lead to the development of these therapies, as well as to modes of prevention that work better and are more cost-effective. Promising areas include improved vaccines for older people that exploit potential gains in geroscience, cancer therapies, synthetic biology, and genomics.

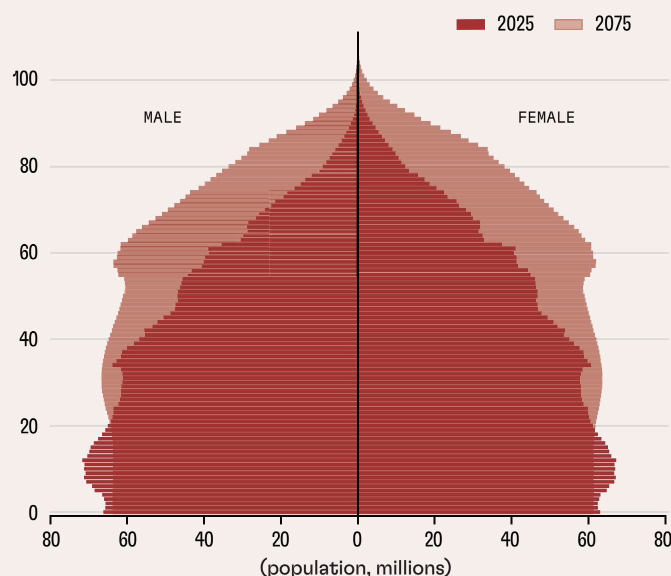
Life-course approach

A focus on prevention demands many radical changes. If the aim is a healthy 90-year-old, a life-course approach to health should start in childhood—and no later than middle age. The next step is to make measures of healthy life expectancy a key metric in allocating health expenditure, rather than measuring output in terms of treating disease and performing operations.

CHART 1

Longevity boom

The share of people over 65 is set to double by 2075.
(world population by age)



SOURCE: UN, World Populaton Prospects 2024, medium-fertility scenario.

Financing is a definite challenge. Health and social care costs are already rising in the European Union because of an aging population, so prevention entails additional spending. That means either more government debt or innovative financing, such as social impact bonds that support increased health expenditure today funded by future gains.

Significant improvements in life expectancy in the 20th century were the result of major innovations in health care, public health, and pharmaceuticals. Substantial gains in healthy longevity in this century will require the same.

As demonstrated in Japan, robotics can offer solutions for care, particularly when there are not enough nurses and support staff. Digital innovation and artificial intelligence also have great potential to fine-tune targeted personalized medicine and improve prevention—as long as we invest in digital literacy across all ages and social strata.

A shift from treating disease to focusing on health means tackling the many socioeconomic factors that impact health. Involvement of sectors beyond health care is needed, including businesses, all levels of government, communities, and the food and housing industries, to name a few.

This broader perspective supports policies such as taxing unhealthy foods and public health campaigns that encourage exercise and healthy living. Further, in a world of shrinking populations, tackling inequality will make increasing economic sense: Society must help all people make their fullest contribution.

Boosting employment

Nearly 90 percent of Europeans in their late 40s are in the labor force. But workforce participation falls below half by people's early 60s, even as people are living longer and therefore spending more.

As a result, the policy debate understandably focuses on changes in the state retirement age. However, while raising the age helps the public purse, it does little to help individuals keep working longer.

Boosting employment from age 50 up requires a much broader range of policies across a wider range of ages. Areas of focus include health, skills, and the creation of age-friendly jobs.

With an aging population, health isn't important just for individual welfare but for the entire economy. Someone diagnosed with cardiovascular disease at age 50 is 11 times more likely to leave employment in the United Kingdom.

Returning to work is especially difficult for older individuals, which means that preventive health policies provide substantial macroeconomic value. A 20 percent reduction in the incidence of six major chronic diseases increases GDP 1 percent within five years and 1.5 percent in ten years, thanks to higher labor force participation, evidence for the UK suggests (Schindler and Scott, forthcoming). The effect is most pronounced for workers ages 50 to 64.

But good health alone is not enough to keep people engaged in employment for longer. We also need the kinds of age-friendly jobs older people prefer—with more flexible hours, fewer physical demands, and greater autonomy. By reducing the competition between younger and older workers, such jobs limit the career impact on the former.

While age-friendly jobs are becoming more common, many occupations, such as construction, remain difficult for older workers. This highlights the need for policies to help with reskilling and transitions into new occupations throughout life, as well as anti-age-discrimination laws.

Such policies not only boost employment, they increase the efficacy of raising the state retirement age and offer a fairer social contract for adaptation to a longer life.

Demography isn't destiny

The aging society narrative emphasizes that failure to adapt to longer lives carries the risk that we will outlive our health, wealth, relationships, and sense of purpose.

In 1951, the Welsh poet Dylan Thomas wrote a poem dedicated to his dying father, "Do Not Go Gentle into That Good Night," urging that we fight death and push back against the inevitable. Similarly, we should not gently accept that demography is destiny.

How we age can be influenced by a host of individual actions and government policies. By making adaptation and adjustment to longer lives an urgent priority, we can deliver a three-dimensional longevity dividend of longer, healthier, and more productive lives.

Our future demands that we seize this opportunity. F&D

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REFERENCES

Omran, A. R. 1971. "The Epidemiologic Transition." *Milbank Memorial Fund Quarterly* 149: 509–38.

Schindler, Y., and A. J. Scott. Forthcoming. "The Macroeconomic Impact of Chronic Diseases in the United Kingdom." *Journal of the Economics of Ageing.*

Scott, A. J. 2024. *The Longevity Imperative: How to Build a Healthier and More Productive Society to Support Our Longer Lives.* New York: Basic Books.

Sustaining Growth in an Aging World

Bertrand Gruss and Diaa Noureldin

OLDER POPULATIONS NEED NOT LEAD TO SLUMPING ECONOMIC GROWTH AND MOUNTING FISCAL PRESSURES

The demographic dividend that has supported global economic expansion in recent decades will soon make way for a demographic drag. In advanced economies the share of working-age people is shrinking already. The largest emerging market economies will reach this demographic turning point within the decade, while the most populous low-income countries will get there by 2070. What do falling fertility and rising longevity mean for the world economy?

Our recent study with coauthors from the IMF's Research Department weighs the economic headwinds from older populations against the tailwinds from healthy aging. We show that improved labor market outcomes for people aged 50 and older, thanks to better health, could contribute about 0.4 percentage point annually to global GDP growth in 2025–50 (see dark-blue portions of bars in Chart 1). Global growth would still be about 1.1 percentage points slower than in prepandemic years if governments do nothing, with demography's drag accounting for almost three-fourths of the decline. But policies to improve people's human capital and keep them in work as they age could offset a lot of this growth drag.

Healthy aging

We aim to offer a new perspective on the old argument that aging will lead inevitably to slumping economic growth and mounting fiscal pressures. Data on individuals from 41 advanced and emerging market economies reveal that the recent cohorts of older people—those 50 and older—have better physical and cognitive capacities than earlier cohorts of the same age. When it comes to cognitive capacities, the 70s are indeed the new 50s: A person who was 70 in 2022 had the same cognitive health score as a 53-year-old in 2000. Older workers' physical health—such as grip strength and lung capacity—has also improved.

Better health means better labor market outcomes. Over a decade, the cumulative improvement in cognitive capacities experienced by someone aged 50 or over is associated with an increase

of about 20 percentage points in the likelihood of remaining in the labor force. It's also associated with an additional six hours worked per week and a 30 percent increase in earnings. All this could mitigate aging's drag on growth.

Economic impact

Our analysis uses a multicountry general equilibrium model that takes into account both the uneven changes in the age structure of economies and the fact that individuals are living longer lives in better health. Despite the positive effects of healthy aging on the labor supply and productivity of older workers, our analysis indicates that global growth will still slow in the future. Some advanced economies with relatively older populations (such as Japan) are likely to see their economies shrink. Others (notably Canada and the United States) are expected to continue to grow during this century, albeit at a slower pace.

Among emerging market and developing economies, China will see a particularly sharp decline in GDP growth. Driven by acutely adverse demographics and the end of rapid catch-up to the world's productivity frontier, China's growth will slow by about 2.7 percentage points relative to 2016–18. We expect India to see a milder growth decline, of about 0.7 percentage point in 2025–50, as its near-term demographics remain favorable. But India and low-income developing countries are set to experience a sharper growth slowdown from 2050 onward.

Policies that help

These projections are not set in stone. In many countries, a significant fraction of workers leaves the labor force after 50, well before statutory retirement age. Health improvements in recent decades indicate that health policies can enhance the human capital of older workers, leading to longer and more productive working lives. Policies that reduce the sizable disparities in health outcomes across socioeconomic groups and countries could reinforce this trend. Other policies to boost labor supply, notably among women, and adjusting incentives to foster longer careers, would also help.

Will it make a difference? Consider the following scenario. First, suppose governments implement additional public health measures that narrow cross-country gaps in the functional capacity of older individuals by about one-fourth over the next four decades. Second, suppose these health measures are complemented by changes to retirement plans, training programs, and more flexible work conditions that incentivize a gradual rise in the effective retirement age in line with improvements in life expectancy. Finally, suppose that policies narrow gender gaps in labor force participation by three-fourths by 2040.

Our simulations indicate that these policies could boost global annual output growth by about 0.6 percentage point over the next 25 years (see light-blue portions of bars in Chart 1). This offsets almost three-fourths of the estimated demographic drag during that period. The growth dividends vary across countries. India, for instance, could see a strong boost to growth given large existing gender gaps in labor force participation. European economies where the effective retirement age is low relative to life expectancy (such as Greece, Italy, and Spain) would benefit from incentivizing longer working lives.

For the majority of countries in our study, the improvements in health and labor supply assumed in this exercise are comparable to trends observed over the past two decades. They are, in other words, within reach. F&D

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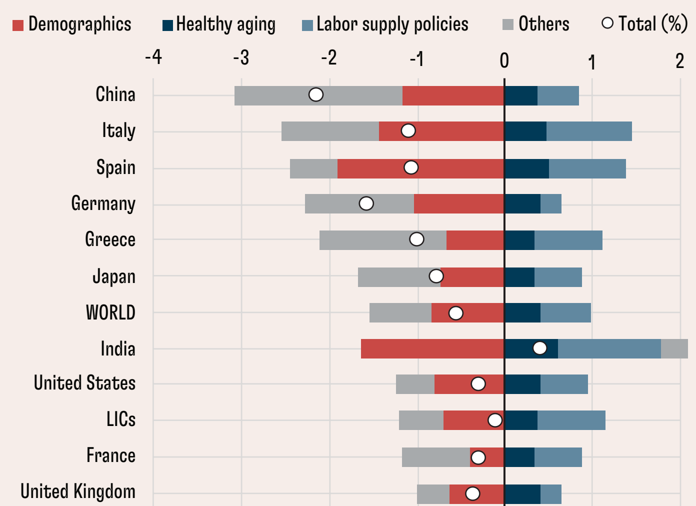
This article draws on Chapter 2 of the IMF's April 2025 World Economic Outlook, *by Bertrand Gruss, Eric Huang, Andresa Lagerborg, Diaa Noureldin, and Galip Kemal Ozhan, with support from Pedro de Barros Gagliardi and Ziyan Han.*

CHART 1

Defying demography's drag

Healthy aging and policies to boost labor supply can mitigate demography's drag on growth.

(contribution to change in GDP growth, 2025–50 vs 2016–18, percentage points)



SOURCES: IMF 2025; IMF staff calculations. **NOTE:** LICs = low-income countries, bloc of 44 countries.

The Debate over Falling Fertility

David E. Bloom, Michael Kuhn, and Klaus Prettner

A DECLINE IN GLOBAL POPULATION LATER THIS CENTURY MAY THREATEN HUMAN PROGRESS, OR IT MAY LEAD TO BETTER LIVES

Global fertility rates have been falling for decades and are reaching historically low levels. While the human population now exceeds 8 billion and may top 10 billion by 2050, the momentum of growth is dissipating because of declines in its most powerful driver—fertility. Over the next 25 years, East Asia, Europe, and Russia will experience significant population declines.

What this will mean for the future of humanity is rather ambiguous. On one hand, some fear that it could hinder economic progress as there will be fewer workers, scientists, and innovators. This could lead to a paucity of new ideas and long-term economic stagnation. Moreover, as populations shrink, the proportion of older people tends to expand, weighing on economies and challenging the sustainability of social safety nets and pensions.

On the other hand, fewer children and smaller populations will mean less need for spending on housing and childcare, freeing resources for other uses such as research and development and adoption of advanced technologies. Declines in fertility rates can stimulate economic growth by spurring expanded labor force participation, increased savings, and more accumulation of physical and human capital. Population decline may also reduce pressures on the environment associated with climate change, depletion of natural resources, and environmental degradation.

Clearly, policymakers face crucial choices in managing the unfolding demographic trends. Responses may include measures to encourage fertility, adjustments to migration policies, expansion of education, and efforts to encourage innovation. Together with advances in digitalization, automation, and artificial intelligence, the coming declines in population pose a significant challenge but also a potential opportunity for the world's economies.

Fertility rates

In 1950, the global total fertility rate was 5, meaning that the average woman in the world would have five children during her childbearing years, according to the United Nations Population Division. That was well above the 2.1 benchmark for long-term global population stability. Together with low and falling mortality, this drove global population to more than double over a half century, from 2.5 billion people in 1950 to 6.2 billion in 2000.

A quarter of a century later, the world's fertility

rate stands at 2.24 and is projected to drop below 2.1 around 2050 (see Chart 1). This signals an eventual contraction of the world's population, which the UN agency expects to top out at 10.3 billion in 2084. Projections of global population in 2050 range from 8.9 billion to more than 10 billion, with fertility rates between 1.61 and 2.59.

These fertility and total population trends hold for much of the world. During 2000–25, fertility rates declined in every UN region of the world and in every World Bank country income group. This will most likely continue over the next 25 years, signaling future global depopulation.

The exceptions to this trend are Africa and a number of low-income countries on other continents where fertility rates are still 4 or higher. As head counts elsewhere dwindle, Africa's share of global population is likely to increase from 19 percent in 2025 to 26 percent in 2050.

Amid the transition from high to low rates of fertility and mortality, population declines are accelerating. Over the coming quarter century, 38 nations of more than 1 million people each will probably experience population declines, up from 21 in the past 25 years. Population loss in the coming quarter century will be largest in China with a drop of 155.8 million, Japan with 18 million, Russia with 7.9 million, Italy with 7.3 million, Ukraine with 7 million, and South Korea with 6.5 million (Chart 2). In relative terms, average annual rates of population decline will be highest at 0.9 percent in Moldova and in Bosnia and Herzegovina; 0.8 percent in Albania, Bulgaria, and Lithuania; and 0.7 percent in Latvia and Ukraine.

The link between fertility rates of less than 2.1 and depopulation is not ironclad. For example, in 6 of the 21 countries with average fertility rates of less than 2.1 and fewer births than deaths during 2000–25, immigration prevented depopulation.

Recent and projected patterns of population decline generally differ in nature and intensity from those of prominent historical episodes. Those cases of depopulation did not reflect mainly fertility choices but rather mass migrations and Malthusian mortality shocks such as famine, genocide, war, and epidemics. Certainly, the outlook for the populations of Russia and Ukraine would reflect the ongoing three years of warfare after Moscow's invasion in February 2022.

Previous situations also differed in duration and

Illustration by Hadley Hooper

intensity. During the Black Death of 1346–53, Western Europe lost upward of a quarter of its population to the bubonic plague, corresponding to an average annual rate of population decline of 4 percent or more. By comparison, the population of Moldova—the fastest-depopulating country this century—has fallen by roughly 1 percent annually since 2000.

Low fertility also feeds a related phenomenon: population aging. This amplifies the economic, social, and political challenges facing countries with shrinking populations. Between 2025 and 2050, the share of population ages 65 and older in countries experiencing population declines will almost double from 17.3 percent to 30.9 percent. In countries whose populations are not shrinking, that age group will expand from 3.2 percent to 5.5 percent.

Challenges of low fertility

Low fertility and depopulation can impede economic and social progress. Fewer births and smaller populations naturally mean fewer workers, savers, and spenders, potentially sending an economy into contraction.

A shortage of researchers, inventors, scientists, and other people-based sources of innovative ideas could also hurt economic progress. In a 2022 paper, Stanford economist Charles Jones argues that the implications of low fertility include a drop in the number of new ideas, which could strangle innovation and result in economic stagnation.

Meanwhile, the burgeoning shares of older people that often accompany low fertility and depopulation may also weigh on growth. Younger people tend to drive innovation. Older people work and save less than the young and create significant burdens for prime-age workers through long-term care needs and spending on health and economic security.

A nation's slow or negative population growth relative to other countries may translate into less military might and political clout on the world stage. For example, some historians attribute France's 1871 defeat in the Franco-Prussian War to the low fertility and slow rate of population growth that stemmed from early and widespread use of contraception among married couples in France.

Economic opportunities

But there are countervailing forces. Fewer children and smaller populations mean less need for spending on housing and childcare. These resources could be reallocated to research and development, adoption of advanced technologies, and elevation of education quality. Declines in fertility can also stimulate economic growth by driving up rates of labor force participation, especially among women, as well as savings and capital accumulation. This phenomenon followed the end of the post–World War II baby boom and fueled a demographic dividend in many countries, contributing as much as 2–3 percentage points to per capita income growth.

A population's productive characteristics figure more prominently than its size in defining its capacity for knowledge creation and innovation. The number of healthy and well-educated people represents the human capital that contributes to advances in knowledge and determines technological progress and economic growth. In his book *The Journey of Humanity: The Origins of Wealth and Inequality* Brown University economist Oded Galor argues that falling fertility and rising education will lead to human capital formation and long-term increases in prosperity.

Population decline may also enhance social welfare if it reduces environmental pressures such as land, air, and water pollution; climate change; deforestation; and the loss of biodiversity.

Adaptation and restructuring

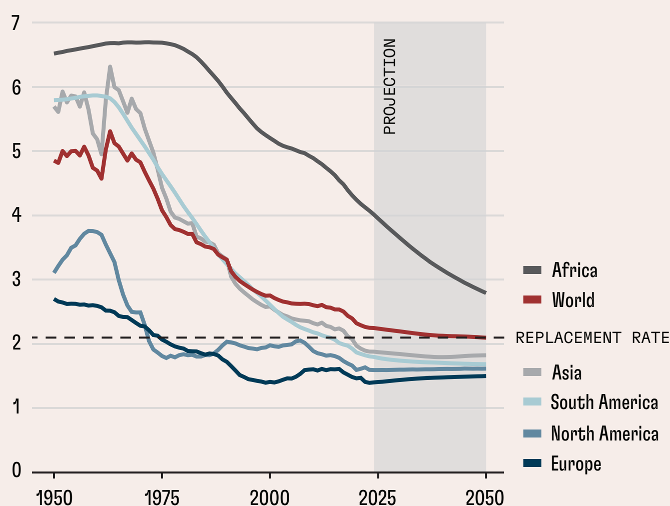
Under what circumstances should policymakers try to address declining fertility, and what measures should they implement?

Those are difficult questions. There is nothing intrinsically wrong with an economy expanding or shrinking along with its population. Regardless,

CHART 1

Fertility free fall

Once well above replacement levels, birth rates have dropped dramatically across the world.
(total fertility rate)



SOURCE: UN, World Populaton Prospects 2024, medium-fertility scenario.

effective fertility policies are notoriously difficult to come by. It's possible that falling birth rates are a clear expression of societal preferences that we should simply accept. The problems have to do with the side effects, such as declining per capita GDP, stagnating innovation and growth, and the challenges of supporting an aging population.

Those threats have already driven some countries facing declining or low fertility to implement measures to stabilize or increase birth rates. South Korea recently reported a rise in fertility rates for the first time in nine years. China abolished its one-child policy. Japan introduced flexible work arrangements. And several European countries are overhauling their social security systems to ensure sustainability.

Policymakers could deploy a range of family-friendly policies to encourage increased fertility, although more children create economic strains of their own, and an expanded workforce would take two decades to materialize. Such policies could seek to enable a better balance between work and family responsibilities. They might include tax breaks for larger families, extended and more flexible parental leave policies, public or subsidized private childcare, and subsidies for infertility treatment.

Gains in education access and quality could also work to enhance a population's capacity for innovation. This would enable a society to create more value through work, elevating both individual and societal well-being.

Retirement policy changes—such as raising the age of retirement—have considerable potential to forestall workforce shrinkage by removing disincentives to working longer. Policies related to low fertility and depopulation may be stronger in combination than in isolation. Robust investments in the health and education of youths and prime-age adults may enable people to be sufficiently healthy and well trained to work productively well past the traditional retirement age.

Policymakers must be mindful of the evolving work landscape, particularly the rise of digitalization, robotics, automation, and artificial intelligence. While these tools offer tantalizing potential, their evolution will not only affect the types of jobs available and how they are performed but will also alter the ways that workers interact socially. This too could have significant implications for fertility levels and patterns.

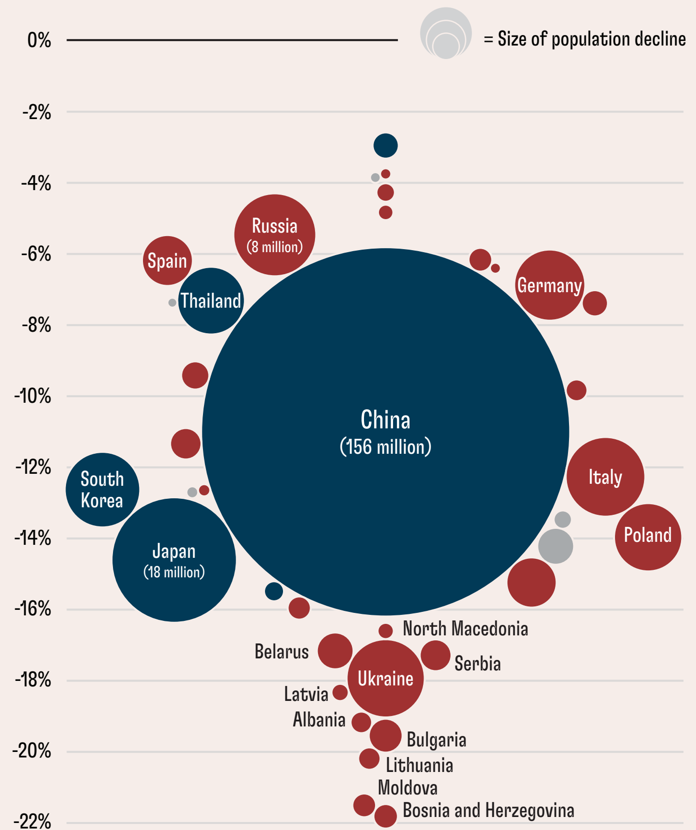
The world is experiencing a dramatic demographic change, from rapid population growth during the past century to depopulation in the current century. The relentless and precipitous fall in fertility is the main driver of this transition, which also involves a historically unprecedented rise in the number of people of advanced age. Policymakers would do well to pay close heed to emerging evidence and global discourse on the economic and social consequences of these demographic shifts. They may not embrace all the consequences, but at least they will be able to point to plausible strategies for addressing them. F&D

CHART 2

Population plunge

Most of the world's population decline over the next few decades will be concentrated in **Asia** and **Europe**.

(cumulative population decline, 2025–50)



SOURCE: UN, World Populaton Prospects 2024, medium-fertility scenario.
NOTE: Only countries with a population of at least 1 million displayed. Gray = other countries.

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Machine Intelligence and Human Judgment

Ajay Agrawal, Joshua Gans, and Avi Goldfarb

AI COULD REVERSE THE WIDENING INEQUALITY DRIVEN BY TECHNOLOGY, OR AGGRAVATE IT

Imagine an island that is home to millions of geniuses. They're experts in everything that can be done on a computer. They never stop working. And they happily do it all for only modest wages. Now imagine the profound questions that would arise when they are integrated into the global economy.

How would their integration reshape markets, wages, and the distribution of power? The geniuses could spur abundant prosperity—or profound instability—depending at least in part on the choices the rest of us make.

In a new age of prosperity, productivity and economic growth could soar and social welfare flourish. The uniquely intelligent workforce could revolutionize industries from health care to education to technology. Office tasks could be handled with flawless efficiency, freeing people to pursue more meaningful endeavors. The cost of many services would drop, raising living standards.

Illustration by Matt Chinworth

What would an age of instability look like? With geniuses performing tasks at a fraction of the cost, knowledge workers and professionals could face mass unemployment. Eroded wages and job security could reverberate across industries, collapsing the middle class and deepening inequality. A few corporations or nations monopolizing access to the geniuses could monopolize wealth and power in unprecedented ways, marginalizing smaller businesses and weaker economies. This could stifle innovation and fuel global tensions.

Human creativity and individuality could lose value as geniuses dominate intellectual and practical contributions. Societies may grapple with existential questions of purpose and identity in a world where many are no longer essential, leading to widespread unrest. The geniuses could roil economies, tear apart social cohesion, and plunge the world into disparity.

This island of geniuses is worth thinking about because a growing number of experts believe that we may be on the cusp of such a technological leap. In 2023, for example, Geoffrey Hinton, who was awarded a Nobel Prize for his pioneering work on AI, said that the technology might surpass human intelligence within 5 to 20 years. Some other experts think it could happen sooner.

Skill bias

Whether AI that eclipses human intelligence leads to more prosperity or more instability will likely depend on how it affects inequality. Since the computer revolution in the 1960s, many economists, including the Nobel laureate Daron Acemoglu, have argued that technological advances may exacerbate income inequality by increasing demand for highly skilled and experienced workers while reducing demand for low-skilled labor, a phenomenon known as "skill bias." Two recent studies shed light on how skill bias applies to the AI revolution.

One study, by Aidan Toner-Rodgers at the Massachusetts Institute of Technology, shows that higher-skilled workers do indeed benefit disproportionately from AI. His examination of how scientists use AI to achieve breakthroughs finds that the output of the top decile was 81 percent higher than without AI. There was little change to the output of lower-skilled scientists. These findings suggest that AI can *increase* income inequality.

But the other study, in which Stanford University's Erik Brynjolfsson and colleagues examine data on call center employees, shows that *lower-skilled* workers benefit disproportionately from AI. There was minimal impact on the productivity of experienced and highly skilled workers, but novice and low-skilled workers saw a 34 percent improvement. Specifically, the authors found that AI tools increased productivity (as measured by the number of problems resolved per hour) by 14 percent on average. AI could boost productivity for lower-skilled workers, for example, by predicting how their higher-skilled counterparts would complete tasks. In this setting, AI *reduced* income inequality.

Judgment role

Why does AI disproportionately aid lower-skilled workers in one study and higher-skilled workers in another? What's the difference between call center employees and scientists? We think it relates to judgment, a key ingredient of decision-making, and prediction. The role of each is central in decision theory, a branch of applied probability theory that assigns probabilities to various outcomes (prediction) and values to their consequences (judgment).

Toner-Rodgers attributes the disparity to differences in judgment when he assesses AI-generated predictions. "Improvements in machine prediction," he writes, "make human judgment and decision-making more valuable." Higher-skilled scientists use their superior judgment to identify promising AI suggestions while others waste significant resources investigating false leads.

The stakes were high in this setting because mistakes resulted in expensive laboratory testing. This concentrated rewards among highly skilled scientists and amplified income disparity.

In Brynjolfsson's study of call center agents, by contrast, the key differentiation between high- and low-skilled workers was the ability to predict the best response to a customer. AI was as good as high-skilled agents at such prediction. The judgment involved in estimating the relative cost of different types of mistakes mattered less because this type of judgment was less scarce and the stakes were lower.

As AI prediction advances, the distribution of judgment will increasingly determine the distribution of wealth and power. Where the difference between high- and low-skilled workers is based on the prediction part of the job, AI will disproportionately benefit lower-skilled workers because AI prediction will substitute for human prediction. This will reduce productivity differences and hence income disparity between workers in this industry and, over time, will drive up wages in low-paying places, even if skills are also lower. Back-office and call center wages, for example, may increase in India relative to the US.

But where judgment defines the difference between high- and low-skilled workers, AI will disproportionately benefit those with higher skills. This will widen productivity differences and income dis-

"The geographic distribution of high-stakes, judgment-intensive tasks will alter the distribution of income and power."

parity between workers in these industries. Labor could shift to places with higher wages that were previously less attractive because the return on higher-skilled workers did not justify the expense. More innovation could move to the US because a greater share of top students attend US universities, and US-based scientists lead in scientific breakthroughs, prizes, publications, and patents.

AI is advancing rapidly, but things like management practices, infrastructure, education, regulations, and customer demand change slowly, which will likely limit the short-term impact of discovering that island of geniuses. In the longer term, however, the impact on the global economy will be significant. Economic stability will hinge on how we manage the transition.

Wealth and power

The geographic distribution of high-stakes, judgment-intensive tasks will alter the distribution of income and power. Regions with more skilled workers, stronger research institutions, and advanced technological infrastructure will likely capture a disproportionate share of economic benefits.

In industries where judgment is highly valuable—such as scientific research, medical diagnostics, and strategic planning—AI will amplify expert productivity. It will increase these workers' earning potential and reinforce the dominance of innovation hubs. But industries such as customer service, where predictive ability differentiates workers, may experience a shift in jobs toward lower-wage regions, which will reduce income disparity.

If AI's impact on high-value, judgment-intensive tasks outweighs its equalizing impact on low-stakes, prediction-intensive tasks, global economic inequality will deepen. The result could be even greater concentration of wealth and influence in a few select cities or countries that attract top talent.

High-income regions with strong AI ecosystems, including parts of the United States, Europe, and Asia, may experience greater return on human capital with the requisite judgment skills. Other regions risk being left behind. The long-term consequences could include growing disparity in technological leadership, research funding, and geopolitical influence. Moreover, more sophisticated AI may redefine which forms of judgment remain scarce, further shifting the balance of power, depending on which regions adapt their workforce to emerging needs.

Policymakers can help in three important ways.

To sharpen judgment, policymakers could expand access to high-quality education and training that emphasizes complex decision-making skills, ensuring that more people in different regions develop the judgment needed to complement AI.

Policymakers could promote global talent mobility and knowledge exchange, ensuring that the judgment necessary for the best use of AI is distributed more broadly across economies rather than confined to a few dominant regions.

Finally, policymakers could create incentives to spread the ability to generate valuable AI predictions beyond traditional power centers through funding, infrastructure, and AI adoption incentives. This would shape the distribution of AI's benefits and foster more balanced economic growth in the long run.

Measures like these will help manage the transition and maximize AI's benefits while mitigating its risks. Computer scientists raced ahead to develop the technology, which continues to advance at a rapid pace. Now economists must catch up. The profession must guide policymakers with research on how best to manage the AI transition. This will increase the chances of policy steering the world toward a future of global stability and prosperity—not the alternative. F&D

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REFERENCES

Agrawal, Ajay, Joshua Gans, and Avi Goldfarb. 2018. *Prediction Machines: The Simple Economics of Artificial Intelligence.* Boston, MA: Harvard Business Review Press.

Brynjolfsson, Erik, Danielle Li, and Lindsey R. Raymond. 2023. "Generative AI at Work." NBER Working Paper 31161, National Bureau of Economic Research, Cambridge, MA.

Toner-Rodgers, Aidan. 2024. "Artificial Intelligence, Scientific Discovery, and Product Innovation." ArXiv preprint, Cornell University, Ithaca, NY.

EMPIRE WINDRUSH
LONDON

A Moving History

Ian Goldin

MIGRATION HAS PROPELLED HUMAN PROGRESS FOR HUNDREDS OF THOUSANDS OF YEARS

JONES/MIRRORPIX VIA GETTY IMAGES

The history of migration is the story of humanity and its progress. It's a story of peaceful cooperation and exchange, but also of violence. Terrible things have been done to compel people to migrate against their will. Yet despite the suffering, migration remains the key to the success of our species.

People on the move carried with them vestiges of old lands and past lives. As they ventured farther from their homes, they encountered previous settlers who had accumulated different habits, technologies, and economic activities. They traded goods and shared ideas, like pollinators of human progress.

In the United States today, immigrants account for a disproportionately large share of intellectual leadership, from Nobel laureates and Oscar-winning directors to founders of unicorn start-ups valued at more than $1 billion. Immigrants to the United Kingdom make up a third of authors awarded the Booker Prize.

The effects on the countries migrants leave behind are equally important. Migrants send home over $1 trillion a year in remittances, exceeding aid and investment flows combined for many developing economies, and they often return with new skills and investment. Entrepreneurs who spent time abroad have created some of the most successful emerging market start-ups, from the Caribbean's Blue Mahoe Capital asset managers to Indonesia's tech giant GoTo.

But the story begins at least 300,000 years ago, when our African ancestors developed the skills needed to migrate over ever-longer distances. About 65,000–70,000 years ago they ventured into the Middle East and then farther, into Asia and Europe. Before the end of the last ice age, over 25,000 years ago, they crossed from Siberia into the Americas.

About 6,000 years ago, in Eurasia, horses were domesticated. The wheel and cart that followed made it possible to journey to new places much farther away, often with plants and animals. As more people migrated, the chances of meeting others increased, creating opportunities to exchange knowledge and learn novel ways to grow food, stay healthy, and organize communities.

The more our early ancestors explored and experimented, the more differences emerged between them. Encounters between these distinctive groups were more productive as a result, but could be a source of conflict. One group was usually

Passengers crowd the decks of the *Empire Windrush* as it docks at the port of Tilbury, England, on its arrival from Jamaica, 1948.

more powerful or more technologically advanced than the other. Trade and early peaceful exchanges could become hostile as one party dominated the other commercially and even violently, through invasion and subjugation.

Unequal encounters

Unequal encounters between populations, whether trading or warring, over time profoundly affected the balance of power across the globe. Yet trade links between empires also enabled a vibrant global exchange of people and ideas.

Marketplaces and ports developed along busy trading routes. Trading cities became centers of gravity where information, produce, and resources were pooled and exchanged. Diverse ideas generated in these dynamic hubs spread, challenging old ways of doing things. As trade networks expanded, the wealth and dynamism of their anchor communities grew. A virtuous spiral emerged of growing wealth; increased trade; and further migration, exchange, and innovation.

Long before Europeans arrived, the inhabitants of the Americas migrated across long distances. Mesoamerican cultures and societies shared know-how about matters ranging from crop development to astronomy and religion. When Europeans arrived, they carried guns, but also deadly pathogens against which the immune systems of Indigenous peoples offered little resistance. The resulting spread of diseases led to a catastrophic loss of life.

In 1519, ships with little more than 600 Spaniards landed on the coast of Mexico. Within a century the 20 million inhabitants of the Aztec empire were reduced to just over a million, many through violence, but the majority from disease. The resources and riches the newcomers extracted were sent back to Europe, luring more and more Europeans to the Americas.

Columbian exchange

The "Columbian Exchange," which began in the decades following 1492, involved irreversible cross-pollination of crops, animals, commodities, diseases, technologies, and ideas carried by migrants between the Americas and other continents.

Besides tobacco and cacao, the many plants from the Americas introduced to other continents included maize, potatoes, rubber, tomatoes, and vanilla. The traffic went in both directions. Crops previously unknown in the Americas would become central to their economies and cultures—sugar, rice, wheat, coffee, onions, mangoes, bananas, apples, and citrus—many of which had initially been brought from Asia or Africa to Europe. Domesticated animals introduced by the Spaniards offered new sources of food and transportation, including horseback riding.

Today, beef and pork are integral parts of the diet in the Americas. Similarly, the white "Irish" potato from the Andes Mountains in Peru became a staple in many parts of Europe, where Belgian moules frites, Swiss rösti, and English fish and chips became cherished national dishes. Much of modern Italian cuisine would be unimaginable without the tomato.

Some of the earliest human records testify to the movement of migrants against their will. Over the centuries, vast numbers of people have been transported as slaves, serfs, or workers bound by different forms of unfree servitude. Historically, a combination of power, coercion, and the ability to subjugate peoples or territory allowed for slavery, as did demand for arduous labor. The European voyages of expansion set the stage for centuries of brutal exploitation of Indigenous African and other populations, during which the violent subjugation inherent in slavery reached industrial levels.

Slavery is the most extreme version of coerced labor that has forced people to migrate. The line between free and unfree employment is often blurred. Similarly, there are subtle differences between types of coercion, such as indentured or bonded labor.

Age of mass migration

In terms of the sheer number of migrants and the distances they covered, the period from the mid-19th century to the start of World War I in 1914 was unlike any other. This age of mass migration followed unprecedented unrest, pogroms, and famines—as well as new opportunities in colonies and the advent of steam and rail, which allowed for cheaper, quicker travel.

Millions of European migrants crossed the Atlantic looking for a better life in the Americas. Comparable numbers were also moving across southern and central Asia, as well as the Pacific. The age of mass migration was remarkable not just for the number of people on the move, but also for its encouragement by host governments. The abolition of slavery in Britain and its colonies in 1836 and in the United States in 1865 led governments and employers to attract voluntary migrants as well as indentured laborers.

Until the 1890s, the scale of migration within Europe mirrored the numbers emigrating from Europe. People moved in search of safety, stability, and opportunity. The industrial revolution led to new industries in new locations, drawing job seekers from across Europe to mushrooming towns and cities. Others moved to rural areas to work in mines and on farms, supplying industrial raw materials and food for rapidly growing centers of activity. As urban economies grew, so too did

the need to dig canals, lay roads and railways, and build new steamships and ports.

Nationalism and protectionism

In the decades before World War I, the view that open borders encouraged prosperity and were a means to escape hardship began to be eclipsed by rising nationalism and economic protectionism. A variety of new rules on movement sought to control entry and exit.

The war increased antipathy toward foreigners, bringing the age of mass migration to an abrupt end. Gone were the days when individuals, not states, could decide where to live and work. After the war governments became preoccupied with restricting entry.

The change in attitude reflected changes in the origins and destinations of migrants and their reasons for moving. As industry grew and birth rates gradually declined, northwestern European economies became migrant destinations rather than sources of labor. Migrants had previously traveled from wealthier countries in Europe to less prosperous regions of the world and more distant colonies, but the reverse was increasingly the case.

Identity cards and passports now allowed nation-states to choose who got to come and go. By regulating the free movement of people, governments could now regulate migrants' access to jobs and government support.

The immense upheaval of World War II left millions of refugees stranded on foreign shores. In addition to 40 million civilians killed, at least 11 million refugees found themselves outside their country of origin.

World War II hastened the disintegration of the remaining colonial empires. Major population movements followed the division of territories. In 1947 the partition of India and Pakistan led to the largest and fastest migration in history: About 18 million people were forced to move between the new territories. In that same year, the newly formed UN partitioned Palestine into separate Jewish and Arab states. In May 1948, when Israel declared independence, the Jewish population had grown to about 1.2 million, after hundreds of thousands migrated from Europe and elsewhere. The majority of the Palestinian-Arab residents in what became Israel were expelled or fled, creating a persistent and escalating refugee crisis.

Cold War politics and the turmoil of decolonization drove massive involuntary movement of people. The Soviet Union comprised 15 states and spanned a geographic expanse of the Eurasian landmass roughly two and a half times the size of the US. In 1991, when the USSR collapsed, the 15 former Soviet socialist republics reasserted their independence, including Ukraine, the Baltic states, and the Central Asian republics. Many ethnic Russians returned to Russia as the newly independent countries restored their languages and customs. Millions of others moved between the former republics in Central Asia, as people were compelled or chose to do so.

Migration today

The number of migrants worldwide has been rising steadily in recent decades, nearly doubling from 153 million in 1990 to 281 million in 2020, the most recent year for which the UN has published its global tally. As a share of the total population, however, migrants today are not much more numerous than in the past. The world's population has increased by almost 3 billion in the past 30 years, meaning that the proportion of people migrating has remained relatively constant. In 2020, about 3.6 percent of recorded citizens were born in a different country; 30 years earlier, it was 2.9 percent.

While this percentage could fluctuate in the future, the number of people on the planet may be approaching its peak. The pace of global population growth is slowing after a period of rapid increase—from 2.5 billion people in 1950 to 5.3 billion in 1990, to today's 8 billion. The world's population is expected to approach 9.5 billion in the middle of this century, then fall to below current levels by the end of it.

There are more than 50 new countries since World War II, from newly independent ex–Soviet republics to those born of the fragmentation of other European, African, and Asian countries. People who previously moved within these countries are now regarded as international migrants.

Migration is often an enormous sacrifice made on behalf of others. In many poor communities the eldest sons or daughters are encouraged to migrate to support their families. Refugees and other forcibly displaced people tend to stay as close to home as possible so that they can return when it is safe to do so. Anywhere from a fifth to half of migrants return home or move to a third country within five years. This may be because they have saved money; gained a qualification; or are coming back to settle, raise a family, or retire.

Migrants are prepared to take risks and make sacrifices. These qualities prevented the extinction of our species during its early evolution, when threatened by droughts and famine. They lie at the heart of the extraordinary progress made by humans ever since. F&D

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MARK HENLEY

People in Economics

The Innovative Central Banker

Andreas Adriano profiles **Agustín Carstens**, finance minister, head of the BIS, and central banker with a start-up mentality

WHEN HE WAS A CHILD, Agustín Carstens' mother would give him the exact bus fare to school and back every morning. One afternoon, he had to walk several kilometers across Mexico City to get home because fares went up during the day. "I asked what happened, and my mother said, 'It's inflation,'" he recounted in an interview. "I was puzzled and thought it would be interesting to understand it better."

Thus germinated the seed for Mexico's leading economist and one of the most successful policymakers of this century. Over a four-decade career, Carstens combined intellectual and academic rigor with pragmatism and political ability in a remarkable series of leadership roles at the International Monetary Fund, Mexico's central bank and finance ministry, and the Bank for International Settlements.

"Agustín has a unique combination of immense curiosity, enormous intellectual power, and a start-up mentality," said Siddharth Tiwari, a former IMF director. He and Carstens have been friends since their days as doctoral students in the 1980s at the University of Chicago. What's even more notable is that Carstens never worked in the private sector and built his career within rigid bureaucracies.

At the IMF, Carstens challenged doctrine by advocating loans to prevent crises, not just fix them. As finance minister, he steered Mexico through the global financial crisis. As central bank governor, he strengthened multilateralism. While general manager of the Bank for International Settlements (BIS), he launched the Innovation Hub, fostering a start-up culture inside the ultradiscreet, almost 100-year-old

Carstens combined intellectual and academic rigor with pragmatism and political nous in a remarkable series of leadership roles.

institution. At the same time, he pushed the BIS to go deeper in understanding recent monetary policy developments.

At the end of June, Carstens will finish his term as the head of the Basel, Switzerland–based "bank for central banks," passing the torch to Spaniard Pablo Hernández de Cos. He will be 67 years old and declined to say what's next for him.

From baseball to economics

Agustín Guillermo Carstens Carstens was born in Mexico City to an upper-middle-class family of German ancestry. In his youth, his budding interest in economics competed with baseball, as he was a promising pitcher in junior leagues.

Economics won out. Carstens earned admission to the Instituto Tecnológico Autónomo de México (ITAM), the university that traditionally trains Mexico's elite civil servants. After graduation and a short internship at Mexico's central bank, the institution offered to send him to the University of Chicago for postgraduate studies. He planned to research the Mexican peso exchange rate market.

That was 1982, the year Mexico devalued the peso three times and nationalized the financial system. Before his departure, Carstens experienced financial turbulence firsthand. Mexico was running out of reserves and was about to impose capital controls, meaning that not even the central bank could be certain of sending him regular payments. Carstens' boss handed him $10,000 in cash as a scholarship advance. "It took six months for payments to be normalized," Carstens said.

Carstens had a busy time in Chicago. He finished his master's and doctoral degrees in just three years. His thesis advisor was Michael Mussa, who later became IMF chief economist. He also met and married Catherine Mansell, a master's degree student from Texas who later published a best-selling book on Mexico's financial system and then wrote fiction under the name C. M. Mayo.

After completing his PhD, Carstens rejoined the central bank as a foreign exchange trader. With the country still in crisis, his job included monitoring exchange rates, trading volumes, and reserve levels, updating them on a blackboard every half hour. "To keep our governor in the loop, we rigged up a camera in front of this blackboard and put a TV monitor in the governor's office so that he could see what we were doing in real time, more or less," Carstens recounted in a 2020 speech.

Carstens was quickly promoted to treasurer, then head of research. That's where he was when Mexico's next currency debacle unfolded, the 1994 Tequila Crisis, which required a $50 billion bailout organized by the US.

It also left unfinished business that Carstens would address seven years later. Fellow ITAM alum Francisco Gil Díaz, President Vicente Fox's newly named finance minister, invited Carstens to be his deputy in 2001. In that role, Carstens pushed through critical regulations to strengthen banks devastated by the 1994 crisis.

Breaking a stigma

In the meantime, Carstens did his first tour of duty at the IMF, as the board member for Mexico, Spain, and Central America in 1999. Later, after three years as Mexico's deputy finance minister, he returned to the Fund as one of three deputy managing directors. Among other things, he gave a boost to the IMF's capacity development operations. "He had a great ability to relate with policymakers as somebody who often had been through the same issues," said his former advisor Alfred Kammer, now the IMF's European director.

While overseeing more than 70 countries, Carstens challenged the IMF to get out of its comfort zone of making loans only if borrowing countries accepted fiscal and economic conditions. He advocated no-strings precautionary lending to help countries with strong fundamentals avoid balance of payments crises triggered by external factors.

However, that was "a jump that took a very long time for the institution to buy into," Carstens said. Even countries were skeptical, as borrowing from the IMF was seen as a signal of economic weakness.

It would take another half decade and a global crisis for the idea to mature. In his next job, it was Carstens who broke the borrowing stigma. In late 2006, when Felipe Calderón became Mexico's president, Carstens was the clear choice for finance minister. In that role, he carried out several fiscal reforms and won approval of four federal budgets in a minority government.

"He turned out to be an excellent politician," said Alejandro Werner, deputy finance minister at the time and one of Carstens' former students. "He managed to pursue a pretty conservative fiscal policy while maintaining a lot of political cohesion."

Carstens pushed for new legislation for pensions and banking as well as energy. His biggest challenge was shielding Mexico from the effects of the 2008 global financial crisis. His conservative fiscal stance kept Mexico financially healthy as the crisis hit.

His early work on precautionary lending came to fruition in March 2009, when the IMF rolled out the Flexible Credit Line (FCL). Countries that were prequalified by strong fundamentals—such as Mexico—could get immediate access to funds with no strings attached.

Mexico signed up for the first FCL, worth $47 billion. "The IMF used to be the emergency room doctor that would rarely give good news," Carstens wrote in a Mexican newspaper at the time. "After the insistence of Mexico and several countries … the Fund will take a more active role in preventing balance of payments crises."

The challenger

In 2010, Carstens became the governor of Mexico's central bank, a position he leveraged to build his international prestige, by upholding multilateralism and seeking to strengthen the global financial safety net.

Carstens threw his hat in the ring for managing director of the IMF following the exit of France's Dominique Strauss-Kahn in 2011, running against France's Christine Lagarde and challenging Europe's traditional grip on the Fund's top job. It became the IMF's most competitive selection process, and, for the first time, the board drew up a short list, with Carstens and Lagarde. "The Fund's institutional development has lagged behind global developments," Carstens

"While general manager of the BIS, Carstens launched the Innovation Hub, fostering a start-up culture inside the almost 100-year-old institution."

said at the time. Although Lagarde still won easily enough, Carstens had raised his global profile.

The following year, Mexico held the Group of Twenty presidency amid the euro area crisis. Carstens helped mobilize large emerging market economies to put together almost half a trillion dollars in additional resources the IMF could tap.

In 2015, Carstens was named chair of the International Monetary and Financial Committee (IMFC), a powerful steering group comprising ministers and governors from the IMF's largest shareholders. That made him a kind of chairman to Lagarde's role as chief executive.

"The chair's job is to foster consensus and engage committee members in a constructive manner," said Tiwari, whose team at the Fund produced the meetings' technical documents. Carstens' performance at the IMFC was decisive in generating support in 2017 for him to become the first BIS general manager from an emerging market.

Pragmatic innovator

Initially, Carstens could seem skeptical of technology. In a 2018 speech, he called Bitcoin "a combination of a bubble, a Ponzi scheme, and an environmental disaster." That perception would soon shift. During a trip to Asia in 2019, Carstens was impressed with Singapore's and Hong Kong SAR's innovative financial ecosystems focusing on retail payments, tokenization, and open finance. It was an opportunity to put his start-up mentality to work.

"Technology travels very fast and affects all central banks at the same time," Carstens said. "There are economies of scope and economies of scale in working together. The BIS is here to facilitate collaboration among central banks, and technology lends itself to this cooperative approach."

Carstens appointed French economist Benoît Cœuré to lead the new Innovation Hub. As a board member of the European Central Bank, Cœuré oversaw payment operations and served as chair of the BIS-supported Committee on Payments and Market Infrastructures. He combined central bank respectability and experience with technology and innovation.

The Hub grew quickly, reaching more than 100 employees and seven centers around the world in five years, mixing macroeconomists with software engineers, blockchain experts, and data scientists. It has conducted about 40 projects to test new technologies, from tokenization to using AI to improve economic analysis.

Some projects are heading toward real-life use. Project Nexus created a prototype platform to interconnect domestic retail payment systems. The governments of India, Malaysia, the Philippines, Singapore, and Thailand are developing it for commercial use by 2027. It will allow 500 million people across the five countries to send money back and forth as easily as Americans use Venmo or Brazilians use Pix.

Project Agorá aims to test new technologies, such as tokenization, within the existing financial system. Over 40 financial institutions and leading central banks—the Federal Reserve Bank of New York, Bank of England, Bank of Japan, among others—joined it. "The Hub is a transformational project in the central bank universe and will need time to deliver benefits and change culture," said Cœuré, who left in 2022.

At the same time, Carstens also pushed the BIS to play a larger role in its core field of monetary policy. A 2022 report was among the first to warn about a global shift from low to high inflation. It also raised the question "Are we seeing signs of an end to the post–World War II globalization era?"

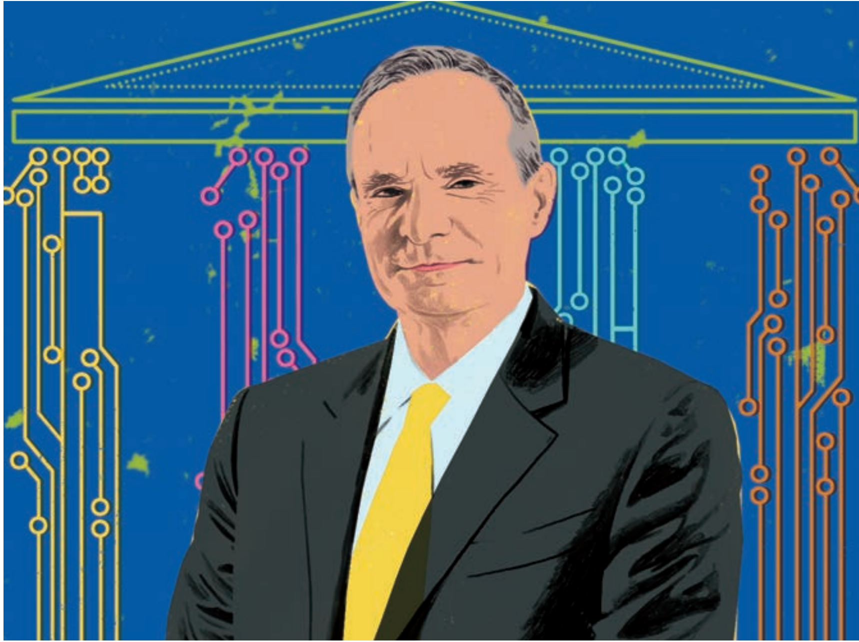
In a February speech, Carstens analyzed policy lessons from the past five years' unique geoeconomic developments, including the pandemic, the resurgence of inflation, and Russia's invasion of Ukraine. He argued that central banks initially focused too much on the risk of inflation being too low. He advised central banks to "reduce the reliance on tools that are difficult to adjust. Quantitative easing generated a lot of liquidity and expansion but was very difficult to rein in," he told F&D. Forward guidance, should also be used more sparsely. "To better transmit a sense of uncertainty, central banks should maybe rely more on stress scenarios."

While some economists compare today's challenges to the supply-side disruptions caused by oil price increases in the 1970s, Carstens thinks the transformation is deeper. "What we are witnessing today is a structural change in the world economy and in the relationships between countries." F&D

ANDREAS ADRIANO *is on the staff of* Finance & Development.

Café Economics

Tech's Winner-Take-All Trap



When controlled by a select few, tech innovation can be self-serving and undermine the institutions that make it possible, says **Simon Johnson**

Eastern Europe in the late 1980s and '90s proved an interesting case study for an aspiring economist who had just written his thesis on the hyperinflation and economic chaos in Germany and the Soviet Union in the 1920s.

After completing his PhD at the Massachusetts Institute of Technology (MIT) and starting a postdoctoral position at Harvard, Simon Johnson found himself working with Poland's first noncommunist government and studying the emergence of the private sector there and in neighboring countries following the fall of the Iron Curtain. Johnson's astute study of private enterprise's successes and failures formed the basis for his enduring research on the role of institutions in economic development, which won him the 2024 Nobel Prize in economics.

The extractive nature of today's Big Tech could fuel populism and threaten democracy, Johnson tells F&D.

Johnson has recently turned his attention to how technology is making its mark on today's economy and the potential impact, of artificial intelligence especially, on the institutions he believes are so crucial for equitable growth. His latest book, with coauthor Daron Acemoglu, *Power and Progress*, examines the close relationship between technology and prosperity and cautions against allowing too few innovators to control technology's strategic direction.

Johnson was chief economist at the IMF in 2007–08 and is now the Ronald A. Kurtz Professor of Entrepreneurship at the MIT Sloan School of Management. He spoke with F&D's Bruce Edwards about technology, inequality, and democracy.

F&D: In *Power and Progress*, you challenge the assumption that technology always brings progress. Why was this a topic worth exploring?

SJ: Well, this is obviously the age of artificial intelligence, and there are great claims being made for the improvements that will permeate all human societies by making computers and algorithms more potent and able to do more thinking for us. While that could happen, we think, based on our reading of history and economic theory, that it's not necessarily the case. Improving technology and expanding the capabilities of some people may not necessarily translate into improved living standards for everyone. A lot of Big Tech bosses are more intensely focused on improving the capabilities of people like themselves. These are highly educated people, mostly white, and mostly men. They have a certain view of the world, of what they want technology to do for them, and of where there's money to be made. And it's quite natural that they are pulled toward inventing things that favor that vision.

Our book is an attempt to propose some alternative visions. Why don't we think about other ways to develop and use technology, including AI? Let's look at what's happened in the past when

Illustration by Sonia Pulido

we've either had technology that's been more tilted toward raising the productivity of less educated people or more tilted toward boosting the productivity of highly educated people. Because that decides whether there's a divergence of job market outcomes, with higher-income, higher-educated people doing a lot better, or whether there's more convergence in outcomes, with people on lower incomes doing better at the same time as the economy overall.

F&D: You warn against the risks of allowing a select few to drive tech. What are the consequences? Is a Big Tech oligarchy a real concern?

SJ: Perhaps not oligarchy in the traditional sense. But in the sense of who controls the vision for what technology can and should be, what we call the "vision oligarchy." We're in the middle of an AI boom. When you talk to people about contrasts between, for example, the US and Europe, they say, "Well, the US is inventing all this technology, and a lot of investment, capital, and talent is going there. Europe doesn't have this." So AI is driving the conversation, but what is AI? What is being built with AI? That's a vision. And visions at the leading edge of rapidly changing technologies are incredibly important. I think that terrain should be contested. People should understand the stakes. They should realize that it's not necessarily a good idea to put all the big decisions in the hands of a few people with their own individualistic perspectives. There's nothing ad hominem here. We all have our own perspectives, but do we want 1 or 2 or 10 people to drive the discussion, or do we want more engagement and a broader conversation?

F&D: You studied the role of institutions in economic development long before technology. How do institutions play into the evolution of Big Tech?

SJ: First, you need good institutions to be a player. Why is the technology being driven by the US? Because it built really good institutions. Second, institutions shape the way democracy operates and how we should deliberate. But recently digital technology has undermined our ability to have debates. Shouting at each other over social media is not the same as getting together and finding common ground. Digital technology has to some degree begun to undermine institutions.

> "Visions at the leading edge of rapidly changing technologies are incredibly important."

The big concern if we continue down the road of widening inequality, particularly a version of inequality in which less educated people feel left behind, is that greater anger fuels forms of populism, as we've seen in many countries. We didn't have that in the US in the first two-thirds of the 20th century, primarily because a lot of people's wages rose and the middle class expanded. Inequality was not the defining characteristic of America's post–World War II economy. That's changed since 1980.

Our concern is that AI, which is made possible by our institutions, is pulled in a direction that undermines democracy. That this causes some sort of systemic issue for our institutions or just tilts them toward being relatively or even extremely extractive. A few people get all the value, all the income, all the power, while everyone else is pushed backward in terms of their opportunities, incomes, and how much they can provide for their families.

F&D: And with so few countries having skin in the game, do you worry that AI will increase economic inequalities between countries?

SJ: Yes. Since the advent of industrial technology, it's been the case that a few places have led the way inventing new machines, and everyone else in the world becomes a taker in that market. A country can go off and invent its own technology. The US did this in the 19th century when it moved from being a country that received technology from Britain to being a country that invented technology. Think of railroads or the telegraph. The US shifted its position; it's possible.

China has shifted its position too. It was a recipient of Western technology in the 1980s, but now it's pushing into global markets with sophisticated products, such as consumer electronics, electric vehicles, and of course AI itself. So you can change your place in the global division of labor, but it doesn't happen very often. Typically you're receiving technology and adopting it.

This winner-take-all dynamic is even more extreme at present than in previous modern technological revolutions. Now it looks like 95 percent of the money being spent on AI development is in the US, 3 percent in Europe, and 2 percent in the rest of the world. (This calculation does not include China because we don't know how much it spends on AI.)

F&D: How do we instill some democracy into our technological evolution to ensure it works for the betterment of society?

SJ: The key points are to recognize the situation and then find alternative paths to push technology in a pro-worker direction. Boosting the productivity of people without a lot of education is key in the US and around the world. The global tech industry, so-called Big Tech, is having a moment of unparalleled power, prestige, and access. Hopefully that comes with a sense of responsibility, a sense of "if you break it, you own it." But some guardrails around Big Tech's activities may also be necessary.

There are clear parallels to what we saw with finance in the early 2000s. I had a ringside seat as IMF chief economist in the buildup to the 2008 crisis. A lot of deference was shown to the "smartest guys in the room," and bad things happened. I want to prevent bad things from happening again. We should persuade people that they must be more careful and be ready with policies and safeguards. F&D

This interview has been edited for length and clarity.

Book Reviews

A Critical Look at Dollar Dominance

Mouhamadou Sy

"The dollar remains central to the global economy despite the search for alternatives."

HOW HAS THE US DOLLAR dominated the global financial system for so long? Harvard economics professor Kenneth Rogoff seeks to answer this question in *Our Dollar, Your Problem*. As the world comes to terms with the dollar's weaponization in geopolitical rivalries and recent flight from US financial assets, the book couldn't be timelier.

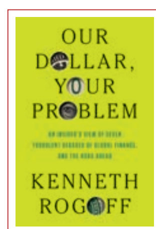
Rogoff compares the dollar's post–World War II performance with other major currencies. While the Soviet ruble was never a serious competitor to the dollar, the Japanese yen at one point was. However, the yen's sharp appreciation after the 1985 Plaza Accord fueled a bubble in Japan's stocks and real estate. By the time Japan had recovered from the bursting of the bubble, the US and its dollar had forged ahead.

The dollar seems equally likely to see off more recent rivals, Rogoff argues. The euro, the world's second-leading reserve currency, is used mostly for trade between European nations. China, meanwhile, faces many obstacles in its bid to challenge dollar supremacy with the renminbi.

Rogoff is an experienced guide. He studied at the Massachusetts Institute of Technology in the late 1970s under Rüdiger Dornbusch, the pioneer of modern exchange rate models. He worked at the Federal Reserve's international finance division in the early 1980s and at the IMF as chief economist in the early 2000s, and has taught in economics departments at some of the top US universities.

Most countries adapt to the dollar's dominance and often peg their own currencies to it. Fixed exchange rates have contributed to all major crises in emerging markets, including in Mexico in 1994, East Asia in 1997, and Argentina in 2002. Rogoff calls for flexible exchange rates, paired with inflation targeting and independent central banks, policy advice he helped pioneer as early as 1995. Several emerging market economies have since made this triptych, along with the stockpiling of foreign reserves and strengthening their financial system, a cornerstone of their macroeconomic policies.

The dollar remains central to the global economy despite the search for alternatives and the recent rise of cryptocurrencies and central bank digital currencies (CBDCs). A digital dollar would easily eclipse other CBDCs because of the



OUR DOLLAR, YOUR PROBLEM
An Insider's View of Seven Turbulent Decades of Global Finance, and the Road Ahead

Kenneth Rogoff

Yale University Press

New Haven, CT, 2025, 360 pp., $35

greenback's status as the leading currency, combined with US technological leadership, the author argues. He is skeptical of cryptocurrencies' ability to evade official control; governments have always found ways to regulate private currencies, he says.

The dollar's supremacy, as Valéry Giscard d'Estaing, France's then–finance minister, observed in the 1960s, bestows "exorbitant privilege." By this he meant the US ability to sell government debt at lower interest rates and run large current account deficits for decades without threatening its international investment position.

But failure to fulfill the responsibilities that come with this privilege—such as providing dollars to the world economy during times of global stress—could ultimately undermine the dollar's dominance. So too, Rogoff warns, could mounting US debt and an unfounded belief that lower interest rates will last forever, as could complacency about inflation and challenges to the Federal Reserve's independence.

Our Dollar, Your Problem is a valuable guide for policymakers navigating current global financial challenges. It provides a nuanced examination of the geopolitical and economic implications of a dollar-centric world and makes a significant contribution to recent literature on dollar dominance. F&D

MOUHAMADOU SY *is a senior economist in the IMF's Monetary and Capital Markets Department.*

Future-Proofing the Euro

Volker Wieland

"Europe's policymakers must not rely on the next crisis to force much-needed reform to the single currency."

THE EURO IS AT THE CORE of the European project, but its future is far from assured. Introduced more than 25 years ago, it has survived one crisis after another, and its rules and institutions have changed along the way. Yet these changes to the functioning of European monetary union form a poor long-term basis for institutions. They have spawned ever larger and less constrained monetary and fiscal interventions and sown the seeds for even worse future crises.

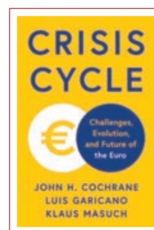
This is the sobering diagnosis of *Crisis Cycle*, a new book on the euro's evolution by a unique trio: Stanford University's John Cochrane, a leading scholar of monetary and fiscal matters; Luis Garicano, once a member of the European Parliament, now at the London School of Economics; and Klaus Masuch, whose lifetime career in the European Central Bank's engine rooms of monetary policy and crisis management included work with the "troika" that negotiated the Greek adjustment program after the 2010 debt crisis.

Crisis Cycle is not a dense equation-filled treatise aimed at specialists. Its easy-to-read conversational style is accessible to anyone interested in the economic and political drivers of institutional change.

Starting with an overview of key economic ideas and the initial design of the European Economic and Monetary Union, the book then covers the global financial crisis, the euro debt crisis, institutional reforms, zero interest rates with asset purchases and subsidized loans, and the policy response to the pandemic and subsequent inflation surge and decline.

The status quo is not sustainable, the authors argue. In a currency union without fiscal union, overindebted countries must be left to default like companies. If the central bank always steps in to prevent default or rising bond yields in fear of default, countries lose the incentive for fiscal responsibility: Frequent interventions and recurrent inflation are sure to follow.

While the euro's founders appreciated the importance of incentives for responsible macroeconomic policymaking, the initial design was incomplete. Cochrane, Garicano, and Masuch propose a package of reforms to be implemented sooner rather than later—and preferably in calm times, not amid the next crisis.



CRISIS CYCLE: Challenges, Evolution, and Future of the Euro

John H. Cochrane, Luis Garicano, and Klaus Masuch

Princeton University Press

Princeton, NJ, 2025, 328 pp., $35

They call for the ECB's release from the problems surrounding sovereign debt and propose a framework for orderly sovereign default and debt restructuring—to be applied as soon as sovereign problems arise and complemented by regulation that reduces banks' exposure to sovereign debt and sovereigns' exposure to banks.

A strong European fiscal and political institution, the authors say, will offer temporary financial and balance of payments support in a crisis—even to the largest euro area economies—and strict conditions to achieve fiscal and microeconomic reform. A strengthened and revitalized version of the European Stability Mechanism, the euro area's existing rescue fund, could work.

National sovereign debt should be long rather than short term. The supply of truly European sovereign debt should be increased, and the ECB should not intervene in the market for national sovereign debt, the authors say.

Crisis Cycle is an urgent warning to Europe's policymakers not to rely on the next crisis to force much-needed reform. Now is the time to future-proof the euro, before it's too late. **F&D**

VOLKER WIELAND *is the managing director of the Institute for Monetary and Financial Stability at Goethe University Frankfurt and holds the IMFS Endowed Chair of Monetary Economics.*

Economics and Nature's Laws

Vivek Arora

"Economies are prone to become unstable as they become more complex."

AMONG ONGOING EFFORTS to rethink the basic tenets of mainstream economics is a provocative new book by James Galbraith and Jing Chen. The authors sweep aside the intellectual structure of mainstream theory—which rests on concepts like the marginal utility theory of value, market equilibrium, and a steady state for the economy—and propose a radically different approach: "entropy economics."

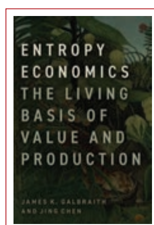
The book is part of an emerging biophysical view of the world, grounded in the laws of nature, which sees economic activities as resembling biological and mechanical activities. For example, economies are prone to become unstable as they expand and become more complex, and they need regulation to exist and survive.

Central to the book's thesis are the laws of thermodynamics—which state that energy can never be created or destroyed, only transformed into different forms, and that the "entropy" (roughly speaking, the degree of disorder or scarcity) in a system or process tends to increase unless it is regulated. Regulation, in this view, has the same function in economics as in mechanical and biological systems: to keep the flow of resources within a system's capacity to handle it safely and sustainably.

Galbraith and Chen, economists at the University of Texas at Austin and the University of Northern British Columbia, respectively, argue that there is no such thing as equilibrium in real life. Instead, systems—including economies—are constantly changing under the influence of physical and biological laws in a world where resources are finite but indispensable for economic activity.

While mainstream theory emphasizes technology's role in driving economic progress, the authors contend that technology can improve only the way natural resources are combined: Resources are the ultimate constraint on the goods and services an economy can produce. Galbraith and Chen draw out the implications of their theory for topical subjects such as growth, trade, development, finance, pensions, and climate—with often startling results.

A key premise is that advanced societies and systems are costly to set up but can run relatively smoothly if established well: They involve high fixed costs but low variable costs, in economists' terms. A possible implication for today's world could be that the international economic system—the result of long years of hard work (high fixed costs) to ensure that it runs smoothly (low variable costs)—would be costly to replace if it broke down.



ENTROPY ECONOMICS
The Living Basis of Value and Production

James K. Galbraith and Jing Chen

University of Chicago Press

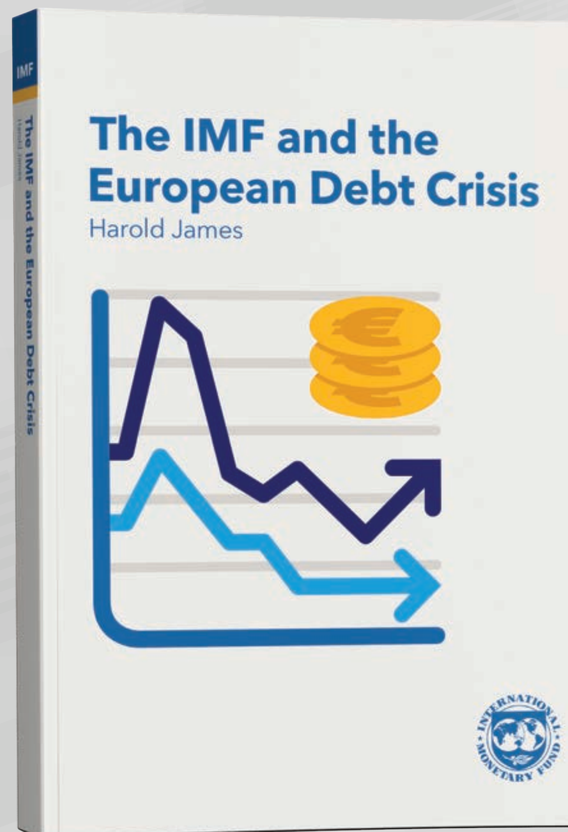
Chicago, IL, 2025, 248 pp., $35

The book's conclusions are somewhat depressing. Human survival and prosperity depend entirely on the availability of natural resources ("low entropy" energy sources). Modern industrial economies make costly and heavy use of resources, contributing to waste, a warming climate, rising seas, and falling human fertility. Given the limits on available resources, which policies and new energy sources can mitigate only up to a point, the future of human society is one of smaller populations, shorter lifespans, lower fixed costs and higher variable costs, and harsher inequalities.

For most readers, the book will be a step into the unfamiliar. The authors do not always define scientific terms, whose meaning must be inferred from the text or found elsewhere, and their intellectual framework is sometimes puzzling. Nonetheless, readers should persevere. They will be enriched by this provocative perspective. F&D

VIVEK ARORA *is a deputy director in the IMF's Middle East and Central Asia Department.*

SPRING FEATURED TITLE



This book explores the Fund's engagement in Europe in the aftermath of the 2008 global financial crisis

It explains how, why, and with what consequences the IMF—along with the European Central Bank and the European Commission (together known as "the troika")—supported adjustment programs in Greece, Ireland, Portugal, and Cyprus.

Additionally, the book examines the intellectual and policy shifts that took place and concludes with reflections on how all the programs also produced genuine policy reform and the possibility of a return to growth and prosperity.

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Two Patacas

Salsa Mazlan

Macao SAR's unique history has yielded different yet equally elegant versions of the same banknote

A Southern lion features on the front of the Chinese note.

MACAO, a special administrative region of China, is one of only a handful of places in the world where different commercial banks issue their own versions of the same banknotes.

While still under Portuguese rule in 1901, the colonial government gave the Banco Nacional Ultramarino the exclusive right to print pataca banknotes. As part of the negotiations that led to the Chinese handover in 1999, a second commercial bank, the Bank of China, was also authorized to issue legal tender. Today both banks share the right to print banknotes, each producing different yet equally elegant new versions of the 20-pataca note, the region's most widely used denomination.

The front of the Chinese note features a Southern lion, a fixture of the Spring Festival, when lion dancers leap through the streets to the sound of beating drums and clanging cymbals and gongs—spreading good fortune for the new lunar year. The lion represents openness, inclusiveness, and determination to forge ahead, according to the Bank of China, whose 160-meter-high local branch building towers behind the lion in a vivid violet spread. To the left is a flowering lotus, Macao's floral emblem, representing prosperity.

The reverse features Macao's science center, designed by Chinese-American architect I. M. Pei, and its planetarium, where 3D constellation exhibits are beamed onto a domed ceiling, in a nod to the region's science and technology scene.

The 161-year-old Banco Nacional Ultramarino's 20-pataca note explores Macao's maritime roots. Featuring old and new facades of the bank's headquarters and a map of Macao from 1780, the Portuguese note is decorated with sampans and sailing junks, a compass, lotus flowers, and a banyan tree. It uses cartographic imagery to chart the port city's evolution across centuries of seafaring history, according to De La Rue, the company that designed the note.

Macao operates its own legal, economic, and administrative systems under the "one country, two systems" framework. Although it covers only 12.7 square miles, it's one of the world's most densely populated places—and among the richest, with a per capita income of about $67,500 a year. Its economy is driven primarily by tourism and gaming, earning it the title "world's casino capital."

Macao's blend of Chinese and Portuguese cultures makes it a unique melting pot, where old meets new, and East meets West. The 20-pataca note honors the city's enduring traditions while celebrating its continuing leaps into the future. **F&D**

SALSA MAZLAN *is on the staff of* Finance & Development.

COURTESY MONETARY AUTHORITY OF MACAO

The Banco Nacional Ultramarino's old and new Macao headquarters.

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